



## Project Document Cover Sheet

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## JISC Final Report

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## 1. Acknowledgements

The SIMiLLE project was funded by a JISC Learning and Teaching Innovations Grant. We would like to acknowledge the help and assistance provided by our Programme Manager, Heather Williamson, throughout the duration of this project. We would also like to thank the staff members and students who took part in the user trials, from the International Academy and the Department of Language and Linguistics at the University of Essex.

## 2. Executive Summary

This final report summarises the outcomes from the JISC funded SIMiLLE project.

SIMiLLE investigated the use of virtual worlds to support second language (L2) learning at the University of Essex. Virtual worlds are becoming an increasing phenomenon for all types of interaction, including social spaces, collaborative working and now e-learning. These applications are part of a group of emerging technologies, which are believed to have great potential for foreign/second language learning. The shift in the use of the web from static to more interactive uses (Web 2.0) is reshaping the way we learn. However, there is virtually no research to-date, which provides evidence of the specific traits and characteristics of technological applications such as virtual world environments that might contribute to the learning of second and foreign languages.

The SIMiLLE project built and trialled a virtual world using the open source OpenWonderland<sup>1</sup> toolset. Considering the relative immaturity of the technologies used this is quite an achievement – the Open Wonderland toolset being used is still at a preview release for version 0.5 (it is not even at a release 1.0 status yet). Given some of the inadequacies of the software we have demonstrated some real benefits from using this approach for language learning (and for other subject areas). The key benefits can be characterised as:

- Virtual worlds can be used to provide stimulating and relevant learning experiences

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<sup>1</sup> <http://www.openwonderland.org>

- They offer clear benefits for promoting constructive activities which require high-levels of co-operation and discussion amongst remote students
- They can provide a rich toolset for teachers, which can be configured and tailored for individual leaning activities
- They offer clear benefits in their ability to support reflective activities based on the re-play of previous in-world learning activities

All of the deliverables from the project can be access online from the project website:

[http://chimera69.essex.ac.uk/SIMiLLE\\_Project/Deliverables](http://chimera69.essex.ac.uk/SIMiLLE_Project/Deliverables)

### 3. Background

The general problem being addressed by SIMiLLE was how to enrich foreign language learning experiences by providing realistic socio-cultural settings and content. It is recognised that optimum language learning occurs when the learner is immersed in the host culture. Many foreign students wishing to study in a UK HEI undertake pre-degree courses to help them meet the required proficiency level. At the University of Essex such courses are provided on campus by the International Academy. By studying in the UK the students have the advantage of being immersed in the culture, but traditional classroom methods rarely take advantage of the cultural context to control the learning content (classroom learning by definition removes students from the 'real' world). Outside of the classroom, the students often cluster together forming linguistic or cultural ghettos. Furthermore, traditional courses in the host country are an additional expense for the student, and there is an undoubted market for a cheaper, distance learning (DL) option. However most distance learning solutions are not only culturally but also socially impoverished (a particular problem in learning conversational English). The latter has been improved through the use of 'chat' rooms and social computing/software technologies, but these are often text based, asynchronous and context independent communications. These 'social' facilities are usually 'add-ons' and do not form part of the explicit curricula being taught making them both linguistically and intellectually impoverished.

In terms of the state of the art prior to the project starting, there was virtually no research to-date, which provided evidence of the specific traits and characteristics of technological applications such as Virtual World environments that might contribute to the learning of second and foreign languages. Also many of the technical platforms were still in their infancy.

The challenge for the project was therefore to provide rich contextual settings for effectively using and practising language in both traditional and distance learning formats.

### 4. Aims and Objectives

The original aims and objectives of SIMiLLE were to develop and evaluate an online virtual world using the Project Wonderland platform that met the following requirements:

1. High quality, synchronous, communication. Many virtual worlds are still dependent on text-based communication, whereas high quality speech is essential for language learning (e.g. for learning pronunciation, conversational skills). The communication must also be closely synchronised with avatar behaviour (e.g. directional and gesture based) to support both verbal and non-verbal communications.
2. Realistic settings and behaviours, which provide contextual cues and sign posts for meaningful discourse and interactions, and to support a 'sense of presence and self'. In many respects this means 'restraining' permissible actions (e.g. flying; avatar dress etc) within the virtual world, and building worlds around purposeful and realistic roles (e.g. a shopkeeper) and actions (e.g. shopping), and not just place (e.g. the shopping mall).
3. Reflection, imitation and practice where the learner has an opportunity to reflect on what is learnt and to take remedial action through further imitation and practice. This requirement is particularly difficult to achieve for distance learning students, and areas in the Virtual World where such activities can take place will be needed.

4. Personalised to support learners of different abilities, styles and learning pace. A selection of different learning scenarios with pre-built associated Virtual Worlds is required to meet individual learners' needs.
5. Transparent teaching so learners become less distracted by the mechanics of the teaching and more focussed on the learning process and content.
6. Motivating through greater realism, autonomous interactions and compelling scenarios.

These aims and objectives did not change during the course of the project. However for practical purposes we constrained our target users (language learners) to students already located at the University of Essex. This was essentially to mitigate any potential technical problems associated with the students using their own equipment and different speeds of network connections. For all of the project trials the students made use of a computer lab at the University of Essex, which allowed us to isolate any technical issues and concentrate on the more pedagogical aspects of the trials.

In terms of our contribution to the JISC e-learning programme, we are supporting its vision of a world where learners and teachers benefit from the power of new technologies to enhance their educational experience. Initially many of the early benefits resulted from technologies that tended to emulate existing practices. The SIMiLLE project was focussed around the new innovation that is required to 'rediscover' pedagogy and generate new insights and practices. One of our challenges was to 'unshackle' the learners from the classroom by providing alternative environments where key pedagogical principles can still be applied and learners and teachers can be exposed to new and enriching experiences. In that context we expect virtual worlds to be a particularly potent environment to support constructivist principles by gaining knowledge and understanding through exploration, reflection and practice.

In terms of the JISC evaluation framework<sup>2</sup> the project addressed the following two key questions:

- What have we done/built/achieved, to what quality, and how efficiently?
- What has been learned or confirmed through development activities?

These questions are further explored in the discussion below.

## 5. Methodology

The approach taken was to develop an online virtual world to facilitate a number of language learning activities. The SIMiLLE project investigated using this virtual world to create meaningful contexts for learning a foreign language. It addressed some of the problems for distance learning students unable to experience the cultural and social immersion when learning a language, and also aimed to enrich and control the cultural content for students already located in the host environment.

The project used Sun microsystem's open source Darkstar platform and Project Wonderland tools as the technology to deploy the online virtual world. The functionality of the virtual world was based on a number of scenarios developed during the course of the project workshops which including the various stakeholders involved in the project. Mayes' (1995) conceptual framework was also used to inform the pedagogical design and evaluation of the learning system. The learners who used the system were made up of foreign students learning English, and trainee teachers of foreign languages. A formative evaluation stage was carried out first, to help refine the design of the system and the process used. This was followed by a longer summative evaluation trial. The results from both these trials have been used to create a best practice guide detailing the lessons learnt from the project. This can be found on the project web site here:

[http://chimera69.essex.ac.uk/@api/deki/files/53/=SIMiLLE\\_D5\\_GP\\_Guide\\_final.pdf](http://chimera69.essex.ac.uk/@api/deki/files/53/=SIMiLLE_D5_GP_Guide_final.pdf).

The overall sustainability of the system was assured through the use and adoption of the system by the University's International Academy with support from the Department of Language & Linguistics.

A scenario based methodology was chosen to help define the user requirements for the SIMiLLE project. Telling stories, or scenarios, about the everyday use of a proposed new system is recognised

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<sup>2</sup> <http://www.jisc.ac.uk/whatwedo/programmes/elearningcapital/evaluation.aspx>

as an effective approach to user needs and requirements capture for a number of reasons. Firstly, it is a way of organising and synthesizing users needs into a coherent narrative. Secondly, it is a vehicle for envisioning the possibilities for future systems and processes that support the users needs; and finally, the narrative format is an effective way to communicate complex concepts to stakeholders and other interested parties. In this respect, scenarios produced by the project team can be used iteratively to feed back current understanding and elicit stakeholder responses until a stable and agreed vision is reached. The scenarios created for the SIMiLLE project can be found on the project website here:

[http://chimera69.essex.ac.uk/@api/deki/files/56/=SIMiLLE\\_Scenarios.pdf](http://chimera69.essex.ac.uk/@api/deki/files/56/=SIMiLLE_Scenarios.pdf).

The user needs for SIMiLLE were gathered through a number of workshops and discussions detailed in the next section. As one aim of the project is to evaluate the pedagogical value of virtual worlds for language learning, it was important that the system and processes envisioned in the scenarios were based on specified teaching and learning outcomes drawn from the Common European Framework of Reference for Languages: Learning, Teaching, and Assessment (CEFR). It was also important that the system supported real-world classroom practice. This implied the need to elicit both the dynamics of classroom practice; for example, how simulation and role play activities are embedded in the class format, how many students in a typical class, how many students each activity involves, how long the activity lasts for, the teachers role in the activity etc.; and, the pedagogical perspective: the types of teaching and learning objectives the activity is designed to achieve, how the activities are developed, documented and assessed, what standards is it based upon, what type of virtual world activities are useful and help develop the desired language competence.

## 6. Implementation

The first step of the project was to define the scope of the work to be undertaken. This was then refined iteratively in a series of workshops and meetings. These involved both project team members and representatives of the various stakeholder groups as follows:

Project:

- Project manager
- Virtual World development experts
- User needs expert
- Pedagogical evaluation experts

User representatives:

- Head of the International Academy
- Course leader (ESL)
- Teacher (ESL)
- ESL Student

The first workshop clarified the broad scope of the project and outlined three possible student learning scenarios that would inform virtual world development. Discussion led to the elaboration of an open and flexible conceptual system based on a multi faceted world/environment containing multiple resources for teachers to develop and refine their own learning scenarios according to the needs of their students. It was envisaged this would involve teachers being able to enhance (i.e. add new objects and actors to) the virtual environment to support any scenario they wished to develop to achieve the required learning outcomes.

The outline of one or more virtual worlds was discussed and complex objects such as a village and/or a town containing features such as a coffee shop, post office, a railway station etc were proposed.

To further refine the requirements, the teachers were asked to document the type of scenario they might use in a classroom based on face-to-face simulation (See the User Requirements document - Appendix A (section 7) for the Railway Station scenario).

The second workshop clarified the requirements and considered the evaluation of teaching and learning outcomes. A demonstration of an outline virtual world, based on the outputs of the first workshop and the teacher's travel scenario, provided stakeholders with a more concrete idea of the technical possibilities. It contained a representation of the Essex campus with its supermarket, bank, post office and coffee shop. Some distance away from the campus there was also a small village and a railway station (analogous to the location of the village and station of Wivenhoe in relation to the Essex campus). It was agreed that this outline environment should provide the basis for the development of the detailed learning scenarios.

Subsequent meetings and discussions with teaching staff led to an understanding of the teacher perspective and the issues of dealing with a class size of around sixteen students.

The resulting SIMiLLE scenarios reflected three different user perspectives.

**Scenario 1:** the teacher perspective, considers the practicalities of creating and managing virtual world activities that meet specified teaching and learning objectives. It includes proposals for documents and processes, such as the Activity Plan and the Role Outline, that support in-world simulation activities for a class of around 12 students.

**Scenario 2:** the classroom learner perspective, considers the experience of the student taking part in the in-world activities designed by the teacher. This includes being briefed about the roles s/he will play within the activity.

Finally, scenario 3: the distance learner perspective, considered the experience of learners enrolled on on-line courses from remote locations. This perspective is supplementary to the key aims of the project. The detailed scenarios can be found in Appendix B of the D1 User Requirements document.

Embedded within the scenarios are the implied requirements for the development of the envisioned SIMiLLE system and its supporting processes. These were extracted and documented in unambiguous terms. Two types of requirements were identified;

- 1) Those relating to the development of the virtual world, and
- 2) Those relating to the systems and processes that support use of the environment to achieve teaching and learning outcomes in line with European standards i.e. suggested processes and document templates.

These were documented in two separate tables followed by examples/templates for an Activity Plan and the Role Outline Document that would be used by the class teacher when preparing for a learning activity using SIMiLLE.

The stakeholder involvement in the project was very good, particularly from the International Academy who will be the main end-users of the system and the results from the project at the University of Essex.

In parallel with this activity, we built and tested the Wonderland 0.5 platform, creating in-world content and behaviours that supported the scenarios and requirements identified above. There were some delays in the release of the anticipated 0.5 version of Wonderland by Sun Microsystems. The current version of Wonderland is 0.5 User Preview 3 and we are still awaiting the final release of the 0.5 platform (prior to this we were testing with 0.5 pre-release and User Preview 1 and 2 versions). The reliability of the platform did improve with these new versions although the platform is still not at a 100% reliable state. We also encountered a number of other issues that included:

- Corruption of textures when exporting objects from Google SketchUp into Wonderland.
- Problems exporting from later versions of Google SketchUp into a form that Wonderland could import.
- Lack of stable object scripting component during implementation which prevented the ability for users to move objects such as train tickets.

- The fact that the graphics cards in the main computer laboratories were not suitable for running the 0.5 release.
- Updates from the trunk svn repository occasionally failed to work.
- Authentication was a problem up until recently.
- Slow update of avatar appearance changes to both the user and other users which is still an issue at the time of writing.
- Models that were too complex directly affected the frame rate for Wonderland and could slow it down to a point where it really wasn't usable. Therefore adjustments were made to the models to reduce their complexity and thus ensure that the frame rate was acceptable for use.

However we were still able to achieve a deployment of 90% of the 'essential' requirements and 50% of the 'desirable requirements specified in the 'System and Virtual World Design' document and were able to adapt our trials and evaluation to match the functions available within the platform.

The scope of the formative evaluation phase was to assess five main issues as highlighted by Chapelle, 2001:

- Practicality & acceptability
- Authenticity
- Learner fit
- Second Language L2 learning potential
- Impact

The participants were five student volunteers recruited in the Department of Language and Linguistics at the University of Essex. All participants were speakers of English as a foreign language at upper intermediate level. The participants' mother tongue included Arabic, Turkish, and Thai. All participants were computer literate, but none of them had any experience using 3D virtual world environments. The output from the formative evaluation was documented in the SIMiLLE Trial and Evaluation plan. A number of design recommendations were made which were used to refine the system for the final summative trial phase.

The main recommendations based on technical and pedagogic issues identified were to:

- a) Simplify the 3D model to improve performance
- b) Enhance training documents
- c) Address privacy issues, e.g., by adding cones of silence in-world
- d) Enhance visual aspects whenever possible
- e) Provide learners with a variety of pedagogical tasks to carry out in-world.

The summative evaluation trial took place over a period of four weeks. Teachers and students from the International Academy participated in the following activities:

- A training session where participants had access to the relevant training documents and were able to get immersed in the virtual world in order to become familiar with its attributes and various places for interaction;
- A role-play activity;
- A treasure hunt activity; and
- A focus group to gather further qualitative data to ascertain strengths and weakness relating the overall trial.

Furthermore, the class teacher, who took part in the trial activities, was asked to complete a series of questionnaires, including one where all questions were open-ended.

The final phase of the project was to create the *Best Practice Guide* deliverable. This document summarised the key findings from the SIMiLLE project. It aimed to provide a guide on when and how to apply virtual world technologies to teaching and learning. Informing both practitioners and senior managers about the benefits and cost of deploying virtual world solutions in their own institutions.

The guide structures the output into the following sections:

- Introduction to the SIMiLLE concept

- Pedagogical guide to SIMiLLE – describing the best way to structure learning and teaching activities using the SIMiLLE platform
- Assessing the effectiveness of teaching using SIMiLLE – based on the evaluations from the formative and summative trials
- Practitioners guide – practical issues that need to be addressed to support practitioners
- Institutional guide – practical issues that need to be addressed by institutions intending to use a SIMiLLE approach
- Technical guide – how you can deploy your own SIMiLLE system

## 7. Outputs and Results

There were several sub-deliverables which contributed to the development of the project and which are available on the project website<sup>3</sup> (eg Requirements report, trial plan, project plan, etc), however the main outputs from the project are in the following areas:

### **SIMiLLE evaluation report:**

The scope of the summative evaluation phase was to assess, as in the formative evaluation phase, five main issues as highlighted by Chapelle, 2001: Practicality & acceptability; authenticity; learner fit; L2 learning potential; and impact. For this phase, the class teacher also participated in the SIMiLLE activities. The participants were six student volunteers recruited in the International Academy at the University of Essex. All participants were speakers of English as a foreign language at beginner's level. The participants' mother tongue included Arabic and Chinese. All participants were computer literate, but none of them had any experience using 3D virtual world environments. The output from the summative evaluation was documented in the evaluation report. A number of design and pedagogical recommendations were made. These can be summarized as:

- Further evaluation trials with larger cohorts of students at different levels of second language proficiency and performing a wider range of tasks in world need to be carried out in future investigations. This should provide further information about the platform capabilities and potential pedagogical limitations in more realistic and varied L2 learning environments.
- Training documents can be further enhanced by increasing the use of visual support, for example by producing videos demonstrating the basics of using SIMiLLE and interacting in this 3D virtual world environment.
- A 'trouble-shooting' sheet could be prepared to support teachers.
- It is essential that teachers are aware of the options available to them to follow and monitor students as effectively as possible since this is of paramount pedagogical importance.
- Visual aspects of the world can be enhanced.
- Work on the delivery of a more stable platform.
- Improvements to speed up downloading time can be made.

Furthermore, the team has participated and contributed in various dissemination activities (see below).

### **SIMiLLE Wonderland demonstrator:**

The Wonderland demonstrator for SIMiLLE was constructed by importing COLLADA models and positioning them in-world. Google SketchUp was used to create most of the models with others being obtained from Google's 3D Warehouse. Throughout the process of creating and testing the demonstrator, help and advice was sought and received from the development team at Sun microsystems and feedback on issues was given to them.

You can access the main demonstrator from this link:

**<http://istrweb.essex.ac.uk:8080/wonderland-web-front/>**

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<sup>3</sup> [http://chimera69.essex.ac.uk/SIMiLLE\\_Project/Deliverables](http://chimera69.essex.ac.uk/SIMiLLE_Project/Deliverables)

In addition the following support documents can be found on the deliverables<sup>4</sup> page of the website:

- Formative trial video
- Summative trial video
- Quick start guide
- SIMiLLE Training document
- Wonderland top tips sheet

The demonstrator consisted of a 'Village' and a representation of part of the University of Essex's campus. These were created to match the requirements identified in the learning scenarios. The Village included a Railway Station (with train timetable), a Restaurant and a Post Office (with exchange rate table) as shown in Figure 1.



**Figure 1. The Village**

Shared applications were also incorporated into the world and these included Firefox browsers and Sticky Notes that enabled students to search the Internet and make notes on their findings. For example these were used in the 'Plan a trip to London' learning scenario. These shared applications are such that students were able to use the applications in just the same way as if they were running on their local desktop but with the advantage that students, who were remote from one another, could all see and control the application and therefore work together. Audio is an intrinsic part of Wonderland enabling students to talk to one another during their learning task. Additionally, 'Cones of Silence' were incorporated to allow small groups of students to have an area where they were not disturbed by others.

Audio recorders were positioned at strategic points in the world, such as in the Railway Station, to allow student discussions to be captured and be used for reflective learning if required.

The Campus consisted of one of the University of Essex's squares and the large Ivor Crewe Lecture Theatre.

<sup>4</sup> [http://chimera69.essex.ac.uk/SIMiLLE\\_Project/Deliverables](http://chimera69.essex.ac.uk/SIMiLLE_Project/Deliverables)



**Figure 2. University of Essex Campus**

Within the square area a Shop, Post Office, Bank and Travel Agents were created. Part of the square is shown in Figure 3.



**Figure 3 University Square**

The Ivor Crewe Lecture Theatre contained a Whiteboard, PDF viewer and Webcam viewer as shown in Figure 4. Although not required specifically for the SIMiLLE project these were included to allow for Mixed Reality Teaching and Learning in the future.

Navigation around the world is typically achieved by making the avatar walk or run. However teleports were also provided to allow ease of transfer between the Village and Campus. The Placemark feature of Wonderland was also employed to further this ease of transfer between areas.



Figure 4. Ivor Crewe Lecture Theatre

#### **SIMiLLE Good practice guide:**

This document summarised the key findings from the SIMiLLE project. It aimed to provide a guide on when and how to apply virtual world technologies to teaching and learning. Informing both practitioners and senior managers about the benefits and cost of deploying virtual world solutions in their own institutions.

The guide structures the output into the following sections:

- Introduction to the SIMiLLE concept
- Pedagogical guide to SIMiLLE – describing the best way to structure learning and teaching activities using the SIMiLLE platform
- Assessing the effectiveness of teaching using SIMiLLE – based on the evaluations from the formative and summative trials
- Practitioners guide – practical issues that need to be addressed to support practitioners
- Institutional guide – practical issues that need to be addressed by institutions intending to use a SIMiLLE approach
- Technical guide – how you can deploy your own SIMiLLE system

The guide can be found here:

[http://chimera69.essex.ac.uk/@api/deki/files/57/=SIMiLLE\\_D5\\_GP\\_Guide\\_final.pdf](http://chimera69.essex.ac.uk/@api/deki/files/57/=SIMiLLE_D5_GP_Guide_final.pdf)

## **8. Outcomes and Impact**

The main outcomes and impact from the project can be categorised into the headings of trial outcomes for users and practitioners, institutional outcomes and external outcomes.

### **Trial outcomes for SIMiLLE users:**

From the SIMiLLE user trials, the participants identified the following characteristics as contributing to a positive experience:

- The training documents were useful and helpful in enabling independent use of the world.
- SIMiLLE has the potential to help students learn about UK cultural aspects.
- Both tasks were perceived by the participants as activities which can prepare them for their stay in the UK.
- The environment potential to simulate real places.
- They found the opportunity to use in-world applications such as sticky notes and Web browser motivating and potentially useful.
- They also considered the 'sharing' of those applications an asset to promote interaction.
- The use of avatars might help 'shy' students to interact more freely than in a face-to-face situation.
- The use of avatars can help individuals to 'explore different identities'.

Aspects, which still need to be improved, include:

- Training documents need to be enhanced by increasing the use of visual support, for example by producing videos demonstrating the basics of using SIMiLLE and interacting in this 3D virtual world environment.
- A 'trouble-shooting' sheet could be prepared to support teachers.
- It is essential that teachers are aware of the options available to them to follow and monitor students as effectively as possible since this is of paramount pedagogical importance.
- Visual aspects of the world can be enhanced.
- Work on the delivery of a more stable platform.
- Improve downloading time.

### **Trial outcomes for SIMiLLE Practitioners:**

With regard to SIMiLLE as a teaching environment, the participating teacher considered it a potentially useful tool to help language tutors increase interest levels and modify the pedagogic approach in the classroom (for second language learning – L2). They also thought that working in this kind of environment might help increase motivation levels which, in turn, can make the target language more memorable for students. Importantly, the teacher felt that the students were freer in their speaking and were able to focus on communication to a greater extent because the use of avatars decreased the potential stress associated with making errors. In other words, anonymity would give students more confidence and be more adventurous while communicating in the L2. The teacher considered the fact that body language and facial expressions are very limited in SIMiLLE might turn out to be an asset because students would need to be more accurate with their language – particularly pronunciation – to be understood by their partners.

The only drawback reported by the teacher was the issue of monitoring. They found the world a restrictive environment for this task and reported that finding students was not always easy. Finally, the fact that students can be located in different parts of the 3D world, might hinder the ability to help all students. This can be particularly important with large numbers of students.

### **Institutional outcomes:**

The project has a direct impact on the International Academy (IA) department, which has many overseas students. One example of this is for the department's Preparatory English Programme where it will enable students to have continued practice of language skills that could be overseen and monitored by their tutors, when they are unable to attend class for an extended period of time, such as when they have to return home. This will mean a much greater level of continuity for the students as they will have the possibility of working with the same students and tutors as they were on campus and it will help maintain, and perhaps improve, their level of English because of continued practice. This could also lead to extra revenue for the department/university.

The trial has shown that the SIMILLE world could be used for other subjects within the IA department and the intention is to use it in the future on the Year 0 Computers and Electronics module.

The project has had the following impact on the wider issues of computer assisted language learning (CALL):

- This project represents a contribution to the field of Second Language Acquisition (SLA) and, more specifically, to the sub-field of Computer-Assisted Language Learning (CALL) by providing much needed evidence of some specific traits and characteristics of technological applications such as 3D Virtual World environments that might contribute to the learning of second and foreign languages.
- The project also contributes to SLA and CALL by providing empirically based information, which can be used by researchers, second language tutors, and materials designers to make informed decisions regarding the potential use of 3D Virtual World environments for language learning/teaching and research.
- The information provided through the project documentation about some relationships between technology and pedagogical practice can be extremely useful at both research and pedagogical levels.
- Raw data from the project can be further utilised by the research team to continue exploring the potential of 3D Virtual World environments in CALL.
- The project dissemination activities, general documentation, and research instruments will be made available for interested practitioners to build on them.
- Language tutors can use the materials and ideas developed in the project to explore various pedagogical possibilities with their own second/foreign language students.
- The outcomes and materials derived from the project have already been of use to MA students in the Department of Language and Linguistics at Essex University who are interested in Computer Applications for Language Teaching.

Informative and illustrative videos based on the SIMILLE project have been made available to the general public. The videos provide an overview of the project in a very accessible way.

## 9. Dissemination

The following dissemination activities have been carried out by the project:

### External Conferences/Papers:

University of Oregon, Immersive Education Days, 18<sup>th</sup> – 20<sup>th</sup> August 2009.

See <http://it.uoregon.edu/events/uoied/>

Paper given: Designing and building immersive education spaces using Project Wonderland: from pedagogy through to practice (Warren Sheaffer: St Paul Community College & Michael Gardner: University of Essex)

EUROCALL 2010 conference, European Association for Computer-Assisted Language Learning. 8-11<sup>th</sup> September 2010. See <http://www.eurocall-languages.org/confs/index.html>

Paper entitled: "3D world environments for second language learning: An evaluation of SIMILLE", Has been accepted for inclusion in the Conference Programme as a Courseware Exhibition.

Authors: Adela Gánem-Gutiérrez, Michael Gardner, John Scott, Joy Van Helvert, Chris Fowler

Immersive Education Initiative, Boston Summit, 23-25<sup>th</sup> April 2010. See

[http://mediagrid.org/summit/2010\\_Boston\\_Summit\\_program\\_full.html](http://mediagrid.org/summit/2010_Boston_Summit_program_full.html)

Paper given: MIRTLE, SIMILLE AND +SPACES

Author: Michael Gardner

### **JISC events:**

Learning and Teaching Practice Experts Group Meeting 17 March 2010

See <http://www.jisc.ac.uk/whatwedo/programmes/elearningpedagogy/elearningexperts/march10.aspx>

Presentation: Language Learning in Virtual Worlds

See <http://www.jisc.ac.uk/media/documents/programmes/elearningpedagogy/simillemarch10.ppt>

JISC conference 2010, 13<sup>th</sup> April, London

See <http://www.jisc.ac.uk/events/2010/04/jisc10/programme.aspx>

Presentation: Using virtual worlds for the online teaching of a second language

### **Book Chapter:**

Chapter accepted for the upcoming book, "Multi-User Virtual Environments for the Classroom: Practical Approaches to Teaching in Virtual Worlds", edited by Giovanni Vincenti & James Braman. Published by IGI Global.

Title of chapter: "Immersive Education Spaces using Project Wonderland: from Pedagogy through to Practice"

Authors: Michael Gardner, Adela Gánem, John Scott, Bernard Horan and Vic Callaghan

### **Other events/activities:**

Presentation at the University of Essex open house event on 5<sup>th</sup> May 2010

Title: Real language learning in 3D virtual worlds

By: Dr Adela Gánem-Gutiérrez and Dr Michael Gardner

See [http://www.essex.ac.uk/openhouse/mini\\_talks.aspx](http://www.essex.ac.uk/openhouse/mini_talks.aspx)

Presentation at the University of Essex Language Learning Café, 24 April 2010

Venue: Colchester Library

Title: Real language learning in the virtual world

See: [http://www.essex.ac.uk/events/event.aspx?e\\_id=1534](http://www.essex.ac.uk/events/event.aspx?e_id=1534)

Various internal presentations within the Department of Language and Linguistics and the International Academy at the University of Essex.

Various online demos and discussions with members of the virtual world community. This has included sessions with the University of Missouri (iSocial project), Berkeley University, and the Immersive Education Initiative.

## **10. Conclusions & Recommendations**

The SIMILLE project has made some clear impacts on the use of virtual worlds for language learning, and the wider adoption of this technology within higher education institutions.- these outcomes are described more fully in section 8.

Considering the relative immaturity of the technologies used this is quite an achievement – the Open Wonderland toolset being used is still at a preview release for version 0.5 (it is not even at a release 1.0 status yet). Given some of the inadequacies of the software we have demonstrated some real benefits from using this approach for language learning (and for other subject areas). The key benefits can be characterised as:

- Virtual worlds can be used to provide stimulating and relevant learning experiences
- They offer clear benefits for promoting constructive activities which require high-levels of co-operation and discussion amongst remote students

- They can provide a rich toolset for teachers, which can be configured and tailored for individual leaning activities
- They offer clear benefits in their ability to support reflective activities based on the re-play of previous in-world learning activities

A key issue arising from this work is that the virtual world technology itself need not be very sophisticated. For all of the SIMiLLE trials we were using the base functionality provided by the Wonderland toolset. The key technology features used were:

- High-quality audio (spatialised) communication
- Ability to share in-world applications such as the web browser, post-it notes, etc

All of the in-world content (eg. 3D models) used by the project was either developed from scratch (using Google Sketchup) or imported from the Google 3D Warehouse. Although sufficient for the purposes of the project, it is clear that professionally produced artwork would greatly enhance the user experience of these environments in the future.

Much of the emphasis of SIMiLLE was not on the technology itself, but more on the support required to enable teachers and learners to engage with this technology. The project spent a great deal of effort in producing activity plan and role outline templates, and also in creating appropriate training and support documents (eg. top-tips document, help guides, etc). These resources were as important as the virtual world platform itself. If these platforms are to become more widely adopted in the future, then more effort needs to be spent on scaffolding the learning design process and learning activities themselves, and developing a wider community of teachers and learners who can support one another in the use of this technology.

The project also made use of the University of Essex Moodle VLE, as a repository for all of the resources required to support the user trials. It is clear that if virtual worlds are to become more widely used that a greater level of integration will be required between the virtual world and VLE environments. We have already started to scope out the integration required between the Moodle and Wonderland environments, which includes:

- Shared authentication systems
- Shared access control to Moodle and Wonderland resources
- Ability to record Wonderland events onto a Moodle repository
- Ability to browse Moodle resources within a Wonderland environment, and be able to launch and view/edit these resources within the virtual world

## 11. Implications for the future

The implications for the future arising from the SIMiLLE project broadly fall into the following areas:

- Information Systems departments within HE institutions need to become more familiar with being able to support virtual world platforms and toolsets as part of their core computing platforms
- Greater levels of integration are required between virtual world and other computing resources eg. authentication, VLE integration, etc
- An open source approach is probably vital. There are commercially available virtual word platforms such as Second Life, which although more robust and (graphically) sophisticated, pose problems when considering how they can be integrated with existing university infrastructure. The ability for universities to be able to deploy and control their own virtual worlds is probably vital to the successful adoption of these platforms in the future
- More attention needs to be paid to supporting practitioners in being able to assess and use virtual worlds for their own teaching. This needs to include guidance and support on best practice, through to shareable virtual world learning resources
- There are still many technical issues, which can prevent the successful use of this technology, particularly when considering scenarios involving remote students and teachers. The main issues arise out of the possible uncertainties, which can prevent users from using this technology. This includes uncertainties over the networks being used (is there sufficient

band width?), the firewalls being traversed (are the appropriate ports open), the capabilities of the client machines (eg. graphics card, microphone, etc) and the number of users attempting the access the service (scalability to large numbers is still an issue).

- Even given these concerns, from our perspective there is no question that virtual worlds will become a key part of the learning infrastructure in the future

## 12. References

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Mayes, J.T. (1995). Learning technologies and groundhog day. In W. Strang, V.B. Simpson, & D. Slater (Eds.), *Hypermedia at work: Practice and theory in Higher Education*. Canterbury, UK: University of Kent Press.