IVY – Interpreting in Virtual Reality

Final Report   Public Part

Project information

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Executive Summary

This report focuses on the Interpreting in Virtual Reality (IVY) project (January 2011-Feburary 2013) and the products and outcomes it generated. The IVY project set out to address the needs of trainee interpreters in higher education and (future) users of interpreting services ('clients') in higher education, vocational training and adult learning contexts. Against the backdrop of a scarcity of training resources, notably for business and community interpreting, and using the virtual world Second Life, the IVY project developed the first 3D virtual learning environment dedicated to interpreting practice, and populated this environment with pedagogic content for both target groups: credible, prepared content such as speeches and bilingual dialogues in a range of languages and language combinations for interpreting students, and information about interpreting and working with an interpreter for clients. In addition, learning activities for both target groups were created to support the acquisition and application of the skills required in interpreter-mediated communication.

The IVY consortium brought together six universities and one consultancy company from five countries (Germany, Greece, Poland, UK and Israel), blending the expertise of interpreter trainers and researchers with that of computer scientists in designing and building virtual worlds. The partners also contributed specialist knowledge in pedagogical evaluation and practical experience in terms of disseminating and exploiting project products and outcomes.

The IVY project was designed as a response to real-life problems and used contemporary pedagogical approaches to provide a solution. The growing need for interpreter services in business and community settings is in stark contrast to the relative scarcity of training programmes, resources and tutors in this field. This calls for more flexible approaches to learning and teaching, which in turn encourages the application of ICT-based solutions. The IVY project started from the assumption that new-generation ICTs such as 3D virtual worlds can provide more dynamic and comprehensive support for learning and teaching than existing solutions. In particular, it was thought that a 3D environment would support collaborative learning, as required in the simulation of professional interpreting practice, and that the 3D capabilities would generally foster social constructivist approaches to learning, by combining opportunities for experiential and autonomous learning, learner collaboration, social interaction and participation.

The evaluation with both target groups confirmed the viability of the IVY environment. Two of the key challenges associated with providing training in virtual worlds—a steep learning curve and the feeling of being 'overwhelmed'—were not borne out in the evaluation; instead, a clear link between the system design and user satisfaction is visible. For example, the opportunity to simulate real-life situations, the range and credibility of the virtual interpreting scenarios, the availability of relevant learning content, and the ease of use of the environment were rated favourably and contributed to a mostly positive perception of the IVY solution. At the same time, some users compared the IVY environment unfavourably with other ICTs, especially video. This highlights user expectations in terms of 'realism' but also suggests that not all users were fully able to appreciate the environment's immersive capabilities. This outcome was corroborated by the observation that learners made relatively little use of the collaborative learning opportunities e.g. for role play simulations.

Based on the evaluation outcomes, it was decided to create a virtual Visitor Centre on the IVY island and to use this to provide guided tours and mentoring for trainers and institutional representatives who are interested in accessing the IVY environment for their particular training purposes. This will allow interested institutions to articulate their needs in an informed manner and enable the IVY consortium to provide solutions on a case-by-case basis, ensuring that each institution benefits fully from the affordances of the environment. The approach will also enable those who received mentoring to increase the IVY network by attracting new students of interpreting and prospective clients of interpreting services.

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1. Project Objectives

The IVY project addresses the specific needs of trainee interpreters and potential users of interpreting services ('clients') in higher education, adult learning and vocational training settings. The **overall project objective** was to design and develop a 3D virtual learning environment and to populate that environment with bespoke monolingual and bilingual content for trainee interpreters and with learning material for clients to teach them about working with an interpreter. The rationale behind using a 3D virtual world for this purpose was to benefit from the specific affordances that virtual worlds offer, namely the opportunities for experiential and collaborative learning; the augmented capabilities they offer (opportunities to perceive a situation from different perspectives [e.g. through flying, zooming, seeing around corners, taking different positions and roles; Helmer and Learning Light 2007]) that could otherwise only be gained from experiencing that situation in the real world, which is often difficult or impossible to do; and the wealth of opportunities for synchronous communication and interaction, which have also been shown to have positive effects on the learning process (e.g. Konstantinou *et al.* 2009, Russo/Benson 2005). This objective involved:

(a) Conducting a review of best practices to explore current uses of ICT in the field of interpreter training and how virtual worlds have been successfully used in related learning contexts, e.g. language learning, and carrying out a user needs analysis to assess the needs of the target groups [pedagogical research];
(b) Designing and building the 3D virtual environment and its interpreting scenarios [technical development];
(c) Creating content and activities for the interpreting scenarios, including creating new language corpora (in Greek, Hebrew and Russian) and adapting existing monolingual corpora [pedagogic corpus creation, adaptation and enrichment];
(d) Evaluating the environment from both functional and pedagogical perspectives with different target group users [pedagogical evaluation];
(e) Promoting the IVY approach and outcomes, in particular with regard to training of clients of interpreting services who are perhaps less aware of the need for training in this field, and with a special focus on the IVY dissemination seminar [dissemination];
(f) Ensuring long-term sustainability of the IVY solution via integration into interpreter training programmes, extension into other higher education, adult learning and vocational training contexts, and transfer into other research contexts [exploitation].

The IVY solution sought to promote innovative ICT practices by bringing together in the virtual space two complementary groups of learners who have traditionally been separate. The environment is designed to give these groups insights into each other's roles and practices, allowing them to benefit from each other's complementary perspectives. The use of the IVY environment in the training of interpreters and their potential clients is therefore likely to make an important contribution to achieving appropriate quality standards for example in interpreter-mediated business, legal and healthcare communication. This, in turn, will contribute, for example, to creating economic wealth by supporting business clients in achieving better solutions for cross-border communication and to ensuring that justice is better served by improving communication in bilingual court rooms. Improved bilingual

communication will also ensure that European citizens have better access to legal, healthcare and other public services.

The users of the IVY environment will benefit not only from the opportunities for autonomous and synchronous self-study and collaborative and situated learning, but also from the opportunities to develop their ICT proficiency and digital literacy for easier insertion into the labour market. This is of particular relevance in situations where remote interpreting (e.g. via videoconference, Skype, telephone interpreting) is becoming more prevalent.

Another important aspect of the IVY environment is that it is available for further research into innovative types of technology-based learning environments. The first application of the IVY environment for this purpose is currently being prepared in the IVY follow-up project EVIVA,[1] which will undertake an in-depth study of learning processes in the IVY environment and will make a significant contribution to informing and improving the pedagogical and technical design of this type of environment. In this way, it will contribute to providing consolidated ICT-based solutions.

The specific approach taken in IVY, which allows for the modular extension of the environment in terms of virtual interpreting scenarios, learning content and language combinations (through the IVY administration panel), along with the provision of Guidelines and Best Practice, create considerable potential for customising the IVY solution and integrating it into clients' own institutional settings.

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[1] EU project EVIVA [Evaluating the Education of Interpreters and their clients through Virtual learning Activities], EU Lifelong Learning Programme, Project number 531140-LLP-1-2012-1-UK-KA3-KA3MP, 2013-2014.

2. Project Approach

The IVY concept is based on a genuine need for interpreter training resources, particularly in business and community settings, i.e. situations where it is either difficult or impossible to gain access for training purposes. In addition, the IVY project sought to respond to the view that interpreting quality is a shared responsibility (Ozolins & Hale, 2009) and, as such, clients working with interpreters should also receive training on how to work with an interpreter. This was based on recent European initiatives that have sought to increase language support in Europe, especially in the public services. For example, recognising the specific challenges of community or public service interpreting, the European Language Council Special Interest Group on Translation and Interpreting for Public Services (SIGTIPS) recommends to public service providers that their "staff should be trained to work with translators and interpreters" (SIGTIPS 2011: 22). Similarly, Article 6 of Directive 2010/64/EU on the right to interpretation and translation in criminal proceedings states that the training of legal practitioners should include training on how to work with an interpreter. Even more importantly, Corsellis (2008) suggests that interpreters and their clients should be trained together.

2.1 Pedagogical approach and methodology

In terms of pedagogical approach and methodology, the main assumption underlying the IVY solution was the observation that most existing ICT solutions for interpreter training satisfy *cognitive* constructivist principles of learning insofar as they foster self-guided learning and knowledge construction from appropriate learning activities and resources, but that they omit important principles of a *social* constructivist approach to learning (Vygotsky 1978). This approach purports that learning is both a social and cognitive activity. It emphasises the role of social interaction and participation (Wenger *et al.* 2002) in learning and knowledge construction, arguing that learning environments should combine "authentic situated action, the collaborative construction of knowledge, and personal experience" (Kiraly 2000: 3). The IVY environment was developed with this in mind. Using the affordances of the avatar-based multi-user 3D world Second Life, it offers opportunities for self-guided practice with prepared material and in realistic interpreting scenarios, as well as opportunities for collaborative interaction in role play simulations.

Pedagogical research at the beginning of the project informed the conceptual design and creation of the 3D virtual environment. This process involved a review of best practices, firstly, to evaluate how ICTs are currently being used in interpreter training and, secondly, to investigate how 3D virtual worlds are used in related learning contexts, with a view to highlighting best practice that could be adapted for the IVY solution. A second step in the pedagogical research involved user needs analyses in the form of focus groups which sought to find out from target group representatives:

➢ the users' previous experience with virtual environments;
➢ the appeal of a virtual environment (VE) for interpreter training, its 'realism' and sense of presence, its usefulness (e.g. to practise their interpreting skills);
➢ users' preferences regarding interpreting scenarios and topics or subject areas they would like to see in such an environment;
➢ the anticipated uses of the IVY platform.

These findings were then fed into the conceptual design of the IVY environment.

2.2 Conceptual design and implementation

One of the first steps in the IVY project was to select an appropriate VE for the project. The literature review undertaken in the project showed that, of the available 3D environments, those allowing multiple-user interaction with the environment through avatars are considered to be the most engaging environments for educational purposes. Of those environments, Second Life (SL) appeared to be the most suitable environment, given that it is public-facing and well established for educational purposes; it is a graphically rich environment; and basic membership is free of charge. From a development perspective, SL comes with many features that support core aspects of the IVY environment and on which the development work can build, e.g. ready-made and modifiable buildings and landscapes, robot-avatars (which can be used as role players), voice chat between users, streaming of audio and video files, links to websites, and options for creating learning activities.

The IVY 3D environment is implemented as a 'virtual island' in Second Life, i.e. a dedicated region that hosts a reception area and a range of virtual interpreting scenarios to simulate professional interpreting practice in situations such as business meetings, interviews, educational events, sales presentations, court hearings, doctor-patient conversations and others.

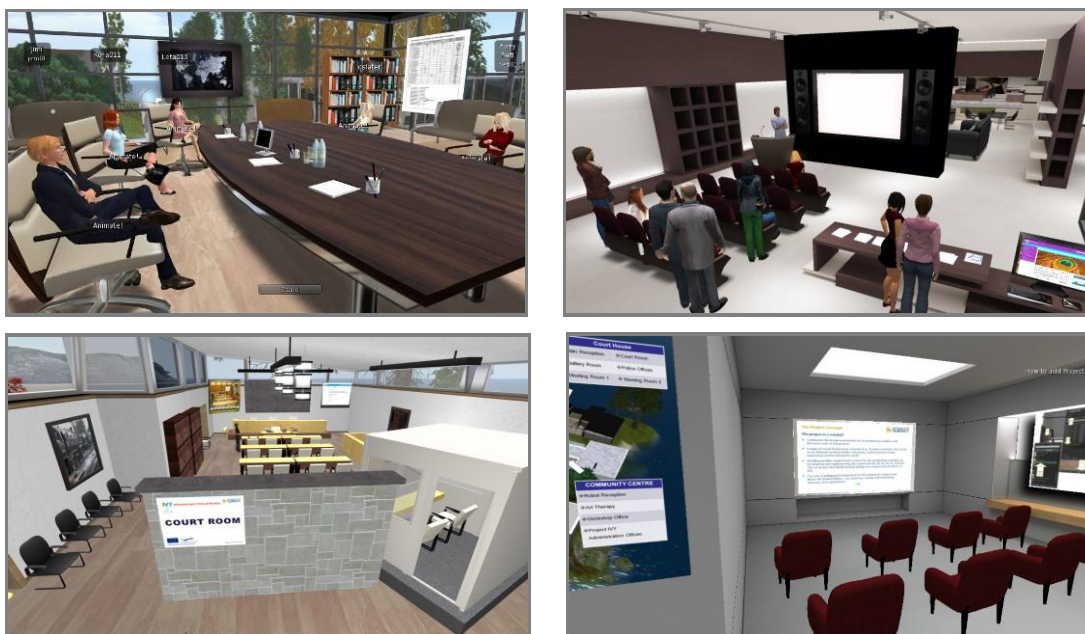Figure 1: Reception area with image of IVY island

Figure 2: Virtual interpreting scenarios (top left: meeting room with robots; top right: presentation area with robots; bottom left: court room; bottom right: presentation area without robots).

The scenarios thus present genuine and realistic settings in which an interpreter would work, with a focus on business and community interpreting. The authenticity of the scenarios was crucial given the vocational nature of interpreter training and the fact that the IVY solution will be used by future and potential users of interpreter services.

Users can work in the environment in different modes to practise their interpreting skills (interpreting students), explore and observe interpreting practice (clients), carry out a range of learning activities, and meet and interact live with others. In the 'Interpreting' mode, the scenarios are populated by robot-avatars, who act as role players presenting the content. An audio player is used to play monologue sections and/or dialogue turns. In the 'Live' mode, the robot-avatars are absent, and students use the virtual locations to conduct their own role-play simulations.
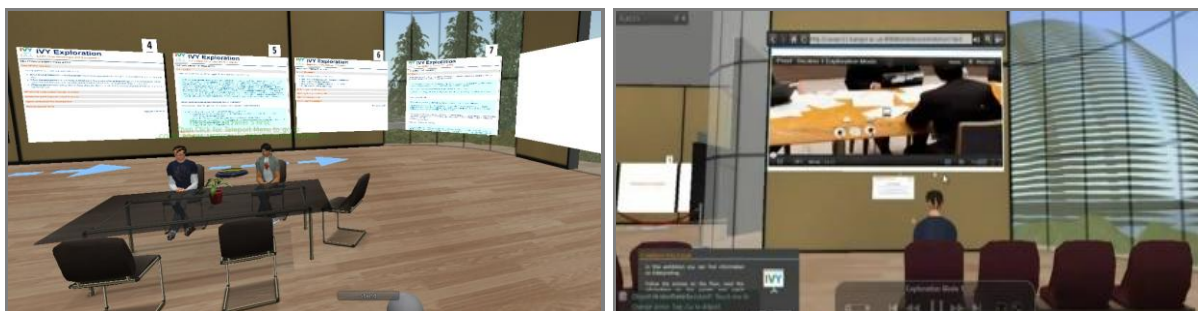

Figure 3: Exploration mode featuring interactive panels, video walls and 3D simulation areas

In the 'Exploration' mode, the user is offered an induction to interpreting (e.g. linguistic, cultural, ethical and practical issues) and can learn about how to work effectively with an interpreter, using interactive panels, video clips and the 3D features of the environment. The learning activities, which were originally conceived to be in their own stand-alone mode, are tasks and exercises for both target groups. To ensure usability and learner efficiency, these were integrated into the 'Interpreting' and 'Exploration' modes respectively.

2.3 Content creation

The creation of content for the IVY environment was informed by the consortium's expertise both in the practice of interpreting itself and in interpreter training. Given the focus of IVY on business and community interpreting, the development of source texts for interpreting practice in IVY needed to focus on the creation of bilingual dialogues as well as monologues such as presentations (e.g. a presentation about a company). These communication genres are at the heart of many interpreter-mediated business and public service encounters, and their availability in the IVY environment was thought to support the practice of (short) consecutive and liaison interpreting, which are predominant in such settings.

The main sources for the content developed to populate the 3D environment were two pedagogical corpora of spoken language, ELISA and BACKBONE. ELISA, the English Language Interview Corpus as a Second-Language Application,[2] is a collection of narrative interviews with native speakers of English giving accounts of their professional lives. It was designed to be a resource for language learning and interpreter training. The interviews are available as video clips and transcripts and

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can be searched by topic (Braun 2005, 2006, 2010). The ELISA corpus was a precursor to the European Lifelong Learning project BACKBONE,[3] which produced similar video interviews with native speakers of English, French, German, Polish, Spanish and Turkish, and non-native speakers of English (English as a Lingua Franca corpus) (Kohn 2012; Kohn *et al.* 2010). The speech in these corpora can be characterised as elicited and thematically focused speech. This makes them different from other spoken corpora that have been collected for different purposes (such as linguistic research) and that represent situations which are not necessarily characteristic of the situations interpreters encounter. By contrast, the interviews in the ELISA and BACKBONE corpora rely on different types of contexts and knowledge, in particular the wider cultural and professional contexts and related background knowledge, which is highly relevant for most interpreting students. At the same time, the speech in the interviews is semi-formal and thus well suited to simulating situations of business and community interpreting.

The approach to creating short monologues for the IVY environment was to select and edit extracts from the ELISA and BACKBONE interviews; the bilingual dialogues for IVY were created by inserting questions in different languages into selected extracts of the existing interviews to obtain dialogues in different language pairs. An interpreting brief was developed for each monologue and dialogue to allow the users to prepare for the interpreting task, e.g. by researching the subject field and the associated terminology.

Alongside the adaptation of the existing corpora, three new corpora (Greek, Hebrew and Russian), featuring a total of 40 video interviews, were created to broaden the range of languages and language combinations available. The topics covered in these corpora match the topics in the BACKBONE and ELISA corpora to achieve coherence across the IVY content and the virtual interpreting scenarios. All corpora cover topics which are relevant to the practice of business and community interpreting from areas such as education and culture, environment, healthcare, political, social and legal issues, media and new technologies, and the worlds of work and business.

Figure 4: Impressions from the new corpora

Furthermore, based on the available video materials from the English BACKBONE corpus and the ELISA corpus, and new video material collected by some of the IVY partners, a total of 39 English video interviews, representing topics that are particularly relevant for business and community interpreting, were edited and processed to create a dedicated IVY corpus. This corpus was then annotated for interpreter training purposes. This was based on the identification of source-text related challenges in some of the BACKBONE and ELISA interviews (Braun & Kohn 2012). The annotation categories refer to discourse-related, lexical and grammatical problems as well as to challenges for memory and retrieval (e.g. enumerations, numbers) and performance-related source text problems (e.g. high delivery speed).

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[3] BACKBONE (European Lifelong Learning project 143502-LLP-1-2008-1-DE-KA2-KA2MP, 2009-10; co-ordinator: University of Tübingen; www.uni-tuebingen.de/backbone).

Figure 5: IVY English corpus, based on BACKBONE and ELISA videos, shown in the BACKBONE search interface

Furthermore, the BACKBONE corpus interface was adapted and extended to incorporate search functions that are relevant in the context of interpreter training. The new BACKBONE functions enable the user, e.g. an interpreter trainer, to retrieve entire interviews, search for lexical items and co-occurrences, and retrieve text sections that contain specific challenges.

An important impetus for the development of the content came from pedagogic research into the use of 'authentic' material from electronic corpora. Prior research in connection with the development of the ELISA and BACKBONE corpora had highlighted the importance of 'pedagogic mediation' and 'pedagogic enrichment' of such materials as an important prerequisite for their authentication and re-contextualisation by learners (Widdowson 2003, Braun 2005, 2007, Kohn *et al.* 2010). In line with these insights, the development of the monolingual and bilingual content was from the outset accompanied by the creation of learning activities designed to help learners apply the materials in the most beneficial way. Thus, the learning activities illustrate different uses of the materials in the environment. This was complemented by the creation of a Guidelines and Best Practice, which was developed after the evaluation of the IVY environment and takes the main evaluation results on board.

2.4 Evaluation

The evaluation of the IVY environment combined the assessment of both functional and pedagogical aspects, drawing on research methods from interpreting pedagogy and educational technology. The *functional evaluation* focused on parameters often used in assessing learning environments (e.g. immersion, sense of presence). It involved a small sample of interpreting students, trainers and representatives from client groups. The *pedagogical evaluation* was designed to gain initial insights into how users use the environment to achieve their learning aims. Given the novelty of the environment, it was difficult to predict the best way of eliciting this information. Both the functional and pedagogical evaluation therefore combined several methods. Introspective methods were used and these included *guided 'walk-throughs'* as part of the functional evaluation, in which users verbalised their thoughts, as well as the use of *e-diaries* in which interpreting students described how they worked with the environment during the pedagogical evaluation. These methods were considered ways that could gain some insights into the processes. They were complemented by *observation* of, and *interaction* with, students e.g. in tutorials, serving as a 'control' instrument to ascertain what the users did, irrespective of what they reported they did. Furthermore, a *hands-on workshop* with adult learners as potential clients of interpreters was organised, as well as an *online module* for all client groups. *Questionnaires* were used with the interpreting students, in the workshop and as part of the online module to elicit comparable responses to key features of the environment.

2.5 Dissemination and exploitation strategies

A number of dissemination activities were planned to take place throughout the lifetime of the project, and an exploitation strategy has been implemented to ensure that the products and outcomes are sustainable beyond the original scope and timeframe of the project.

The main dissemination event was the IVY dissemination seminar held in London in November 2012. This event brought together key stakeholders (interpreters, interpreter trainers, public service providers, researchers) and also attracted the interest of European bodies e.g. the interpreting units of the European Commission and the European Parliament. The seminar featured presentations from external presenters and from members of the IVY consortium and was an opportunity to showcase the IVY solution within the broader context of other uses of ICTs for interpreter training.

Prior to the dissemination seminar, the IVY project was represented at a number of conferences and events at which different aspects of the project were presented. (e.g. IATIS conference in Belfast; CyberWorlds conference in Darmstadt; the annual conference of the European Society in Translation Studies in Vienna; BDÜ conference in Berlin).

The IVY website (www.virtual-interpreting.net) also served as a dissemination tool. The website started out as a simple static website but was then revamped as a dynamic, interactive site, which features videos and demonstrations of the IVY environment and its working modes. The dedicated project website is complemented by information about IVY on partners' websites and the use of social media (e.g. IVY presence on LinkedIn, Twitter feed during the IVY seminar).

A third strand to the IVY dissemination lies in the publication of academic papers and articles in professional magazines. Six papers have been written for publication in academic journals/volumes, focussing on the pedagogical and technical design of the 3D environment, and on the initial use of the environment by interpreting students. In addition, two articles about the IVY solution have been published in *The Linguist*, the magazine published by the Chartered Institute of Linguists, one of the main professional interpreter associations in the UK, and in the magazine of the German Steinbeis foundation, a platform for small and medium enterprises.

The approach to exploitation includes mainstreaming and multiplying strategies. In terms of *mainstreaming*, the IVY solution was developed with transfer to, and uptake by, key stakeholders and decision makers in mind—both in the field of interpreter training and, due to the novelty of the IVY solution with regard to using 3D virtual environment technology in an educational setting, stakeholders in educational technologies. In terms of *multiplication*, one of the prerequisite drivers for making the IVY environment available to end users, i.e. individuals within the consortium's institutions as well as third parties, was to ensure that the IVY environment and all its underlying components would have a robust rapid prototyping capability, building on the clarification and refining of user functional requirements, pedagogical design principles and standards of expected operation of the system and quality of service (further on exploitation, see Chapter 5).

2.6 Management and quality assurance

To ensure the smooth progression of the project and the various parallel strands of research, development, evaluation and dissemination activities, a Microsoft SharePoint website was set up for project management and as a place for exchanging information and ideas among the consortium members, internal communication and document sharing. Alongside the management website, a public website was set up to showcase the IVY project and its products (www.virtual-interpreting.net). A quality assurance plan based on a Plan-Do-Study-Act cycle was implemented to ensure the quality of all of the project activities and tasks. This was complemented by an external evaluation which served to monitor and ensure consistency and quality across the project.

3. Project Outcomes & Results

The IVY project has produced the following outcomes and results:

1. The **pedagogical design** for a 3D virtual environment addressing the needs of trainee interpreters and users of interpreting services, especially in business and community interpreting, serving as a framework for development.

2. The **built 3D virtual environment** – with a reception area and a range of **virtual interpreting scenarios**. The latter represent situations where interpreters work, focussing on business and community interpreting. Many of their architectural and design features are shaped by real life. As illustrated in Figure 5, they are populated with relevant spatial objects (furniture, backgrounds, etc.).

Figure 6: Virtual interpreting scenarios. Top left: seminar/classroom (interpreting in educational settings); top right: court room (legal interpreting); bottom left: tourist office (situational or escort interpreting); bottom right: meeting room (interpreting in business settings).

3. **A Heads-Up Display (HUD)** for navigation to the working modes of the IVY environment, selection of communicative situation (monologue/dialogue), languages or language combinations, virtual interpreting locations and the audio player to listen to the materials. The HUD is built using web technologies, i.e. whilst visible in Second Life, it displays content using a dedicated browser. It gives access to a teleport system for the user to navigate to the virtual locations.

Figure 7: HUD (bottom left) and teleport menu system (top right)

4. In addition to the 3D virtual environment, a **User Administration Panel** was developed as a content management system for the consortium and other interested parties. The Panel is used to upload content to the IVY environment, to create and manage users and includes basic monitoring functions.

5. Audiovisual content (**monologues, bilingual dialogues**) in different languages and language combinations (English, French, German, Polish) to populate the environment, based on the BACKBONE and ELISA corpora. In addition, due to the languages required by interpreting students during the evaluation phase, materials were also created in Chinese and Italian and integrated into the IVY environment.

6. Three **new audiovisual corpora (Greek, Hebrew, Russian)**, and monologues and bilingual dialogues, based on these to extend the range of available languages and language combinations; and the **IVY English corpus**, which draws together selected material from the BACKBONE and ELISA corpora and which was annotated to highlight interpreting challenges in these corpus materials.

7. An **extension of the BACKBONE search interface** to incorporate interpreting-specific annotations, which were applied to the IVY English corpus, and corresponding search functions. The adapted search interface offers options to retrieve e.g. entire interviews and interview sections that contain specific challenges.

8. **Two sets of learning activities**, for interpreting students and potential clients, integrated into the Interpreting and Exploration modes. The learning activities for interpreting students are implemented as web-based solutions and can be accessed from within the HUD, where they are displayed as Google docs. The learning activities for clients are integrated into the Exploration mode content.
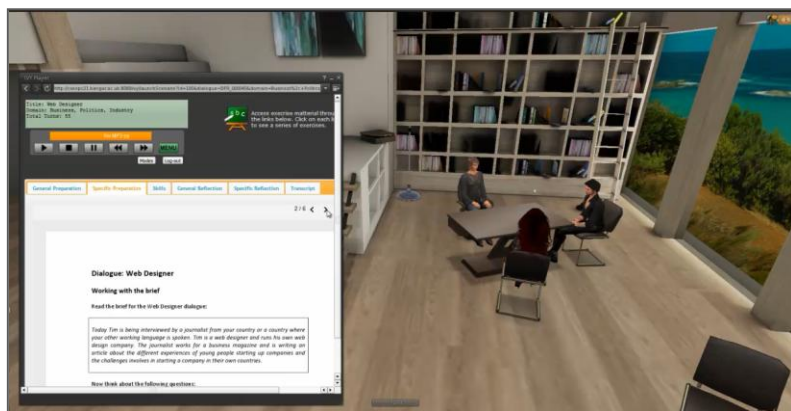
Figure 8: Learning activities for interpreting students, accessed via the HUD

9. The **outcomes of the functional and pedagogical evaluation**: These are two major reports summarising the results of the functional and pedagogical evaluation respectively. Both evaluation types involved representatives from the two target groups in addition to the involvement of interpreter trainers and software developers.

10. The IVY **Handbook (including User and Administrator Handbook)**: The instruction manual accompanying the IVY 3D environment.

11. The **IVY Guidelines and Best Practice**: Complementing the Handbook, this booklet provides tips and guidelines on how to make best pedagogical use of the environment. It is based on the IVY pedagogical design and the evaluation outcomes and it constitutes an important step towards promoting learner autonomy and collaboration. It has two parts, one for interpreting students and one for 'clients', but each part also makes reference to collaborative working methods.

12. **IVY Visitor Centre**: A key part of the IVY exploitation strategy, the Visitor Centre is intended for providing guided tours and mentoring to trainers and institutional representatives who are interested in using the IVY environment for training purposes at their own institutions.
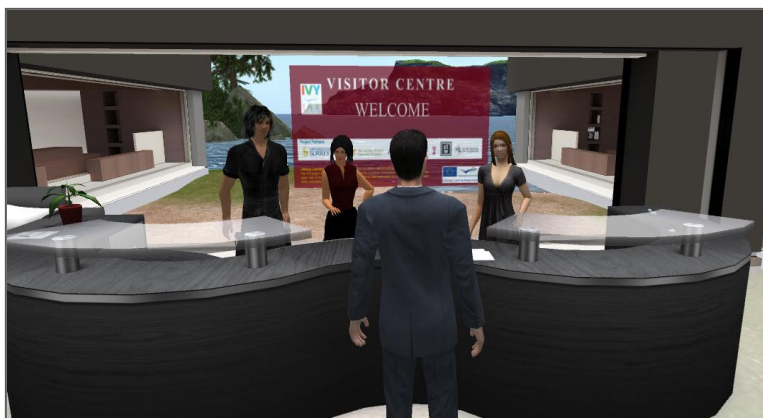
Figure 9: IVY Visitor Centre

13. The **IVY website** started out as a simple static website but was then revamped to a dynamic, interactive site. The website is complemented by information about IVY on partners' websites and the use of social media (e.g. LinkedIn, Twitter).

14. The **IVY dissemination seminar** in London in November 2012. Approximately 70 participants, primarily from across Europe attended the seminar, including key stakeholders from European institutions, public service providers, practising interpreters and interpreter trainers, and researchers. A similar event (VLT-2012) was held in Bangor in October 2012 in connection with the evaluation workshop, primarily targeted those interested in the development and educational uses of 3D worlds.

Figure 10: IVY flyers and booklet for dissemination events

Figure 11: IVY dissemination seminar and VLT-2012

15. **Publications and papers:** Academic papers include Braun & Kohn 2012 (use of video corpora in interpreter training); Braun et al. 2013 (conceptual design of IVY, initial evaluation results); Chmiel et al. 2012 (pedagogical perspective of IVY); Ritsos et al. 2012 (technological solution adopted in ICY); Ritsos et al. forthcoming (further details of technological solution; usability evaluation with interpreter clients); Articles in professional magazines include Botfield & Slater 2013 (*The Linguist*); Hoffstaedter & Kohn 2012 (Steinbeis Magazine).

Academic papers:

Braun, S. & Kohn, K. (2012) "Towards a pedagogic corpus approach to business and community interpreter training" in B Ahrens, M Albl-Mikasa and C Sasse (eds), *Dolmetschqualität in Praxis, Lehre und Forschung. Festschrift für Sylvia Kalina.* Tübingen: Narr, 185-204.

Braun, S., Slater, C., Gittins, R., Ritsos, P.D. & Roberts, J.C. (2013) "Interpreting in Virtual Reality: designing and developing a 3D virtual world to prepare interpreters and their clients for professional practice" in D. Kiraly, S. Hansen-Schirra & K. Maksymski (eds) *New Prospects and Perspectives for Educating Language Mediators.* (Series "Translation studies/Translationswissenschaft", edited by Franz Pöchhacker and Klaus Kaindl). Tübingen: Gunter Narr, forthcoming.

Chmiel A., Tymczyńska M., Braun S., Slater C. (2012) "Kształcenie kooperatywne i sytuacyjne metodą projektów: zastosowanie wirtualnego środowiska IVY w szkoleniu tłumaczy ustnych" [Cooperative learning and situated project-based learning: Integrating the IVY virtual environment in interpreter training.] in Janikowski, Przemysław (ed.) *Tłumaczenie Ustne - Teoria, Praktyka, Dydaktyka [Interpreting — theory, practice, didactics],* nr 2: Stare problemy, nowe metody [Old problems, new methods]. Częstochowa: Wydawnictwo WSL, 213-240.

Kritsis, K. & Floros, G. (2014) Εικονικά περιβάλλοντα εκπαίδευσης διερμηνέων: IVY – Interpreting in Virtual Reality [Virtual learning environments for training interpreters: IVY – Interpreting in Virtual Reality]. *Proceedings of the 4th Meeting on Greek Translation Studies.* Thessaloniki. (Accepted for publication)

Ritsos, P.D., Gittins, R., Roberts, J.C., Braun, S., Slater, C. (2012) "Using Virtual Reality for Interpreter-mediated Communication and Training." Proceedings of the *Cyberworlds 2012 International Conference,* Darmstadt, 25-27/09/2012, 191-198.
http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6337419&isnumber=6337397

Ritsos, P.D., Gittins, R., Braun, S., Slater, C., Roberts, J.C. (2013) "Training Interpreters using Virtual Worlds", LNCS *Transactions on Computational Science.* Berlin: Springer. (Accepted for publication)

Articles in professional magazines:

Botfield, N. & Slater, C. (2013) "Virtual Interpreting" *The Linguist* 52/2, 14-15

Hoffstaedter, P. (2012) "IVY – Virtual Training for Interpreters" Steinbeis *Transfer Magazine*, 03/2012, 14-15 (German print version; German and English online versions)

4. Partnerships

The IVY consortium consisted of seven partners from four European countries (two from Germany, two from the UK, one from Poland and one from Cyprus) and one non-EU country (Israel). Of these institutions, six are higher education institutions and one a consultancy company. Together they bring together the core competences and expertise required for the successful realisation of the project. These competences lie in particular in interpreter training and pedagogy; design and development of virtual environments; e-learning and blended learning approaches; pedagogical evaluation; dissemination and marketing; and European project management.

Having a **multi-country partnership** made it possible not only to create the multi-language content but also to maximise the possibilities for integrating the IVY solution in different educational settings by exploiting and building on the links and networks of the partner institutions. The continuation of the partnership is ensured by the EVIVA project, which has secured EU funding to carry out further development and evaluation work based on the IVY outcomes. The involvement of a non-European partner, Bar-Ilan University, enabled the creation of two new digital corpora including languages which are relevant in business and community interpreting contexts (especially Russian) and gave the consortium access to the extensive expertise in corpus design, interpreting studies and interpreter training of the institution's principal investigator, Professor Miriam Shlesinger.

The partnership of the consortium members has been extended throughout the project lifetime, with an intensified effort in the final phase of the project, in the run-up to, and aftermath of, the evaluation workshop in Bangor and at the final dissemination seminar in London to create sustainable partnerships with representative from the two main target groups. An effort was also made to extend the target groups to include software developers for transferring the IVY solution to other educational contexts and future collaboration opportunities. The main outcomes from the efforts of partnership formation and collaboration are summarised below:

In terms of key stakeholders in the world of **interpreter training**, both the DG Interpretation of the European Commission and the European Parliament DG Interpretation and Conferences (SCIC) have shown considerable interest in the IVY project and the solution it has developed. Representatives from both institutions attended the IVY dissemination seminar. Furthermore, the coordinator was invited after the dissemination seminar to present IVY in a keynote at the annual SCIC conference on 21 March 2013, which was attended by 160 representatives of all major interpreter training institutions in Europe and outside Europe. This has created further interest in accessing the IVY Visitor Centre from a number of European universities offering interpreter training. SCIC representatives commended the opportunities that IVY presents for role-play activities and for supporting the type of social interaction required in interpreter training. Further contacts include contacts with CIUTI via the University of Trieste, Luspio University in Rome, as well as links with the Interpreter Division of the Chartered Institute of Linguists in the UK (leading to the publication of an article for the Institute's professional magazine). A new **research partnership** has been created with the Translation and Interpreting Department of the University of Granada and the Virtual Worlds Research Group of the Middle East Technical University in Turkey to form a new project consortium exploring the integration of Learning Analytics into the IVY solution.

With regard to groups representing **clients of interpreters**, several developments can be reported. Firstly, in line with the reinforced need for training in how to work with interpreters in the training of legal professionals, as outlined in the recent European Directive on the right to interpretation and translation in criminal proceedings (Directive 2010/64/EU), the project has made numerous contacts with legal professionals, police forces and legal trainers, leading to a workshop on the use of new technologies for the training of legal practitioners in how to work with an interpreter, in Surrey on 10 May 2013. Secondly, contacts were developed with Guildford College of Law, a vocational training institution whose careers service has shown great interest in the IVY solution. Although planned activities with college students during the project lifetime had to be postponed, further collaboration activities are planned for the new academic year of 2013/14. Thirdly, contacts are currently being explored in the medical sector to establish whether a similar event to the May workshop could be organised with potential interpreter clients in the healthcare sector. Finally, in the European interpreting services, the European Parliament DG Interpretation and Conferences is particularly interested in piloting the IVY Exploration mode with users of interpreting services in the European Parliament, with a visit to the Visitor Centre being firmly planned.

As an additional target group, **software developers** were involved in many of the evaluation and dissemination activities of IVY, especially through Bangor University, the partner responsible for the development of the virtual environment. Bangor has closely co-operated with institutions such as the British Computer Society 'Animation and Games Development – Special Interest Group', EADS CASSIDIAN, Daden Technology Ltd, General Dynamics, and others in Wales. The British Computer Society has supported several events that were held in London and Wales for the evaluation and dissemination of IVY (e.g. the IVY evaluation workshop in Bangor in October 2012). General Dynamics, which serves government and commercial customers in more than 40 countries, is particularly interested in simulation-based training solutions that place emphasis on aural, visual and kinesthetic senses. Bangor and Surrey team members have arranged to present the IVY research results to the company's Director of Research & Development in London on 3 May 2013. EADS, a global leader in aerospace, defence and related services, is interested in many aspects of 3D virtual environments, particularly those that enable engineers to interact with the computer-generated models used in the aerospace and defence sectors. EADS representatives visited the Surrey and Bangor teams during 2010 and 2012 respectively, and participated in the IVY evaluation. Existing collaborative projects between EADS and Bangor are expected to be informed by the research results of the IVY 3D VLE. Daden Technology Ltd, a VLE solution provider and one of the largest companies of its type in the UK, was one of the technical evaluators and participants from this company took part in the workshop held by the IVY Bangor team in October 2012. Discussions with Daden exploring the potential for collaborative projects have already taken place. Converging interests have been noted and further discussions planned to take place in May/June 2013.

5. Plans for the Future

The dissemination and exploitation activities that have already been carried out have prepared the ground for sustainable action beyond the funding period of the project. The exploitation strategy of IVY builds on a model of 'dynamic extension' of both the IVY environment (including its virtual interpreting scenarios, content and learning activities) and the target groups. The exploitation strategy has three main strands.

Direct use of the IVY solution by the partner institutions

The first strand involves the use of the IVY outcomes within the IVY partner institutions offering interpreter training programmes for interpreter training and for research at MA level and in associated universities which took part in the evaluation. The IVY environment will be made available to future student cohorts in the partner institutions. Apart from using the IVY environment with the ready-made monologues and dialogues, a particular focus for future academic years will be the use of the Live mode to simulate situations which would otherwise be difficult to access (e.g. court hearings, police interviews, doctor-patient conversations). This will make the environment even more suitable in the context of community/Public Service Interpreter training, where training resources and opportunities are still extremely rare in many European countries.

In addition, this strand will involve an extension of the IVY content to incorporate other languages/language combinations as required (Chinese and Italian materials were already added to the IVY environment before the end of the project lifetime; Spanish will be one of the next languages to be included).

The partner responsible for technological development in IVY is furthermore interested in researching the user experience in 3D immersive environments, e.g. to find out what enhances immersion and which design features result in a stronger sense of presence. The IVY developers also see great potential in re-using the IVY architecture in different educational contexts. The IVY virtual environment was designed and implemented using popular Java Enterprise technologies for the backend. These technologies are popular in Enterprise Systems and follow the principles of Service Oriented Architectures. This strategy ensures reuse in other domains through the modification of the services' interfaces.

Exploitation in other academic institutions

Dissemination and exploitation activities have already generated considerable interest from other academic and training institutions, and it is anticipated that this interest will be harnessed in mutually beneficial ways. These institutions include Higher Education institutions across Europe that offer interpreter training and other stakeholders described in Chapter 4. Tools for exploitation in these institutions have been created during the project lifetime in order to maintain the momentum of the project and to ensure that users from outside the consortium can be given access to the IVY environment in a way that is suitable for them. The **IVY Visitor Centre** has been developed as a place where visitors can be given an induction to the IVY environment and how it can best be used (see also Chapter 3). The Handbook and the Guidelines and Best Practice document will also assist with exploitation in other academic institutions.
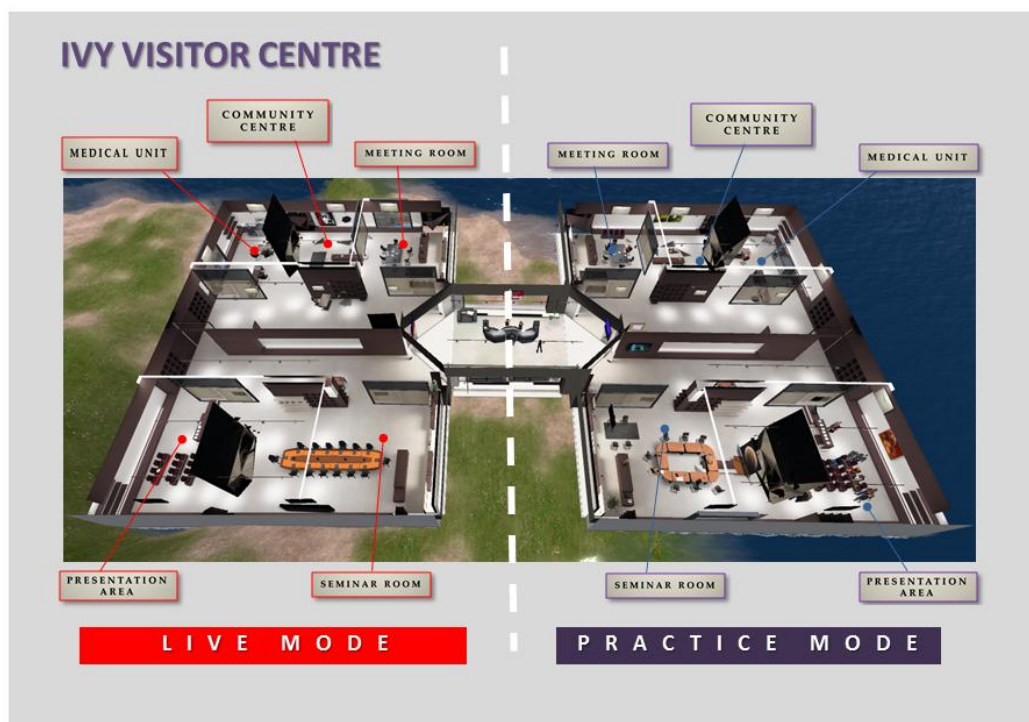
Figure 12: Aerial view of the IVY Visitor Centre

Exploitation in further research and development projects

The third level of exploitation focuses on further development of the IVY environment, research into its affordances and learning processes, transfer to other educational contexts, and other research activities.

One concrete activity is the continued collaboration of the European IVY partners in the follow-up project EVIVA – Evaluating the Education of Interpreting Students and Clients through Virtual Activities, a new Lifelong Learning Programme project[4] which started in January 2013 with the aim of conducting an in-depth evaluation of learning processes taking place in the 3D virtual environment and comparing these to learning processes in other ICT learning environments.

A further plan is to collaborate in the development of a suite of ICT-based learning and assessment tools for providing training in intercultural and interpreter-mediated communication. This will include tools that interact with the IVY virtual environment to provide Learning Analytics for activities in this 3D world. A funding proposal to this effect is currently in preparation and will be submitted in April 2013.

The outcomes of EVIVA and other possible research and development projects based on IVY will inform the design of virtual learning environments and will thus be highly transferable to other fields of education.

Further research and development opportunities will be sought in the Horizon 2020 programme but also with funders that support sustainability and commercialisation (e.g. the Technology Strategy Board in the UK). The contacts with industry partners and other potential key stakeholders (see Chapter 4) will be crucial in this respect.

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[4] Project number 531140-LLP-1-2012-1-UK-KA3-KA3MP

6. Contribution to EU policies

The IVY project was guided by, and has in turn contributed to, several important European initiatives in the field of Public Service Interpreting. This will ensure that the project will generate uptake at European, national and local levels.

Firstly, the aims of the IVY project were closely linked to the work conducted by the European Language Council Special Interest Group on Translation and Interpreting for Public Services (SIGTIPS). This Group conducted a needs analysis for training in public service interpreting, contending that the lack of tutors and resources, which is particularly drastic in this field of interpreting, "may be addressed by resorting to new technologies allowing for the creation of a virtual learning environment", which "will make training possible irrespective of location or geographical distance between trainers and trainees" (SIGTIPS 2011: 18). One of the Group's recommendations to Higher Education institutions was therefore that "whenever appropriate, remote teaching and learning facilities should be put in place" (22). Furthermore, recognising the specific challenges of public service interpreting, SIGTIPS also recommends to public service providers that their "staff should be trained to work with translators and interpreters" (SIGTIPS 2011: 22).

The call for training those who work with interpreters was also reinforced by a second important strand of development on which the IVY project built. In 2010, the European Council and the European Parliament adopted Directive 2010/64/EU on the right to interpretation and translation in criminal proceedings. Exemplary for the greater emphasis that the European Union has placed on quality standards for interpreting in migration contexts, Article 6 of this Directive states that the training of legal practitioners should include training on how to work with an interpreter.

By responding to both of the major points emerging from these initiatives, i.e. the use of new technologies in training and the provision of training not only to interpreting students but also to users of interpreting services, the IVY solution has ensured that its outcomes are highly relevant to the educational contexts that it has targeted. It was anticipated that the outcomes of the IVY project would be highly likely to attract attention from key stakeholders and decision makers. Approaching these target groups was therefore an integral part of the IVY exploitation strategy from the outset.

7. References

Braun, S. (2005) "From pedagogically relevant corpora to authentic language learning contents" *ReCALL* 17 (1), 47-64.

Braun, S. (2006) "ELISA – A pedagogically enriched corpus for language learning purposes" in S. Braun, K. Kohn & J. Mukherjee (eds) *Corpus Technology and Language Pedagogy: New Resources, New Tools, New Methods*. Frankfurt am Main: Peter Lang, 25-47.

Braun, S. (2007) "Designing and exploiting small multimedia corpora for autonomous learning and teaching" in E. Hidalgo, L. Quereda & J. Santana (eds) *Corpora in the Foreign Language Classroom. Selected papers from TaLC6.* Amsterdam: Rodopi, 31-46.

Braun, S. (2010) "Getting past 'Groundhog Day': spoken multimedia corpora for student-centred corpus explorations" in T. Harris & M. Moreno Jaén (eds) *Corpus Linguistics in Language Teaching*. Frankfurt am Main: Peter Lang, 75-98.

Braun, S. & Kohn, K. (2012) "Towards a pedagogic corpus approach to business and community interpreter training" in B. Ahrens, M. Albl-Mikasa & C. Sasse (eds) *Dolmetschqualität in Praxis, Lehre und Forschung. Festschrift für Sylvia Kalina.* Tübingen: Narr, 185-204.

Corsellis, A. (2008) *Public Service Interpreting: The First Steps.* Basingstoke: Palgrave Macmillan.

ELISA project website http://www.corpora4learning.net/elisa [accessed 03/05/2011].

Helmer, J. & Learning Light (2007) *Second Life and Virtual Worlds*. Learning Light Limited.

Kiraly, D. (2000) *A Social Constructivist Approach to Translator Education. Empowerment from Theory to Practice*. Manchester: St. Jerome.

Kohn, K. (2012) "The BACKBONE project: pedagogic corpora for content and language integrated learning. Objectives, methodological approach and outcomes" *Eurocall Review* 20 (March 2012). Available at: http://www.eurocall-languages.org/review/index.html [accessed 07/08/2012].

Kohn, K., Hoffstaedter, P. & Widmann, J. (2010) "BACKBONE – Pedagogic corpora for content and language integrated learning" in A. Gimeno Sanz (ed.) *New Trends in Computer Assisted Language Learning: Working Together. Proceedings of the Annual Conference of the Association for Computer-Assisted Learning (EUROCALL). Universidad Politéchnica de Valencia, Gandia Campus, 9-12 September 2009*. Madrid: Macmillan ELT, 157-162.

Konstantinou, N., Varlamis, I. & Giannakoulopoulos, A. (2009) "The use of 3D virtual learning environments in the learning process" *Proceedings of the 5th International Conference in Open and Distance Learning 2009* (ICODL 2009), Athens, Greece, November 2009. Available at: http://www.dit.hua.gr/~varlamis/Varlamis-papers/C39.pdf [accessed 07/08/2012].

Ozolins, U. & Hale, S. (2009) "Introduction: 'Quality in interpreting: A shared responsibility'" in S. Hale, U. Ozolins & L. Stern (eds) *The Critical Link* 5. Amsterdam, Philadelphia: John Benjamins, 1-10.

Russo, T. & Benson, S. (2005) "Learning with invisible others: Perceptions of online presence and their relationship to cognitive and affective learning" *Educational technology and society* 8(1): 54-62.

Special Interest Group on Translation and Interpreting for Public Services [SIGTIPS] (2011) *Final Report*. Available at: http://ec.europa.eu/dgs/scic/docs/_sigtips_en_final_2011.pdf [accessed 06/08/2012].

Vygotsky, L. (1978) *Mind in Society.* Cambridge, MA: Harvard University Press.

Wenger, E., McDermott, R. & Snyder, W.M. (2002) *Cultivating Communities of Practice*. Cambridge, MA: Harvard Business Press.

Widdowson, H.G. (2003) *Defining issues in English language teaching*. Oxford: OUP.