

# Forming Sign Language Learning Environments in Cyberspace

**Maria Mertzani, Clark Denmark, Linda Day**

Centre for Deaf Studies, University of Bristol  
8 Woodland Rd, BS8 1TN, Bristol, U.K.

E-mail: [M.Mertzani@bristol.ac.uk](mailto:M.Mertzani@bristol.ac.uk), [A.C.Denmark@bristol.ac.uk](mailto:A.C.Denmark@bristol.ac.uk), [Linda.Day@bristol.ac.uk](mailto:Linda.Day@bristol.ac.uk)

## Abstract

In this paper we would like to present the way virtual learning environments (VLEs) are employed into the teaching and learning of British Sign Language (BSL) at the Centre for Deaf Studies of Bristol University, U.K. By considering cyberspace a culturally constructed environment where people can form different virtual communities, this paper will focus on the creation of a virtual learning community for the purposes of BSL learning. Both tutors and students have access and meet on two main websites: SignStation and DeafStation, from where they can retrieve authentic BSL material during their classes and interact through a videoconferencing software system, Panda. We describe the development of VLE and discuss the practices employed when meeting online in terms of instruction delivery and knowledge construction.

## 1. INTRODUCTION

The World Wide Web is an emerging technology that facilitates and supports the process of learning and teaching a second language (L2) since it is a tool for accessing to learning resources as well as for communicating from distance. It integrates interactive media, (e.g., text, video, audio, multimedia) and computer-mediated communication (CMC) systems (e.g., e-mails, Internet Relay Chats, MOOs, I-phone, NetMeeting) which create new and rich teaching/learning environments (Pastor, 1998; Ryan et al., 2000).

From this perspective, network technology is used for the delivery of instruction (Martin, 2005). This means that the educational process is experienced online, in different virtual learning environments (VLEs). In this paper, the World Wide Web is considered a culturally constructed environment (Baym, 1995; Lawley, 1994; Reid, 1995). Under this concept, it is the space where social relations occur as well as the tool that people use to enter this space. Furthermore, it is the space where communities are formed, when individuals meet and share common beliefs and practices not in physical reality (as in face-to-face communication) but by means of communication technology, in a virtual world (Jones, 1995; Jordan, 1999). Thus, beyond an educational tool, Internet provides a cultural space, the cyberspace, where people can interact, share common knowledge and information and, build communities in different virtual environments.

VLEs are currently appearing for the purposes of sign language learning and teaching. Many websites present different sign languages through digital video recordings (streaming video) or through animated signing avatars for vocabulary, grammar, syntax and Deaf culture learning. In this paper we attempt to delineate the process of how a VLE can be formed for the purposes of sign language learning. Particularly, we introduce a VLE for studying British Sign Language (BSL) at the Centre for Deaf Studies, in Bristol University, U.K. The paper will also highlight the factors that influence the design of a VLE as

well as the importance for adopting a learner-centred approach when teachers are faced with the challenge of implementing VLEs for sign language learning.

## 2. CYBERSPACE AND SIGN LANGUAGE LEARNING

### 2.1 DEFINING VIRTUAL LEARNING

By definition, virtual (or distance) learning is the learning that takes place when (Whiteman, 2002: 4):

1. Teachers and learners engage in learning separated by distance.
2. The instruction is delivered via websites and CMC.
3. The communication is interactive while teachers and students send and receive their feedback.
4. The delivery of the instruction can take place simultaneously or asynchronously.

Virtual learning supplements traditional classrooms with web-based material and learning activities, discussion boards on different course sites and online chats in asynchronous or synchronous way. Thus, the structure of a VLE resembles the one of a traditional environment: "There [is] an interaction space like a classroom, where the "teacher" or others may "lecture" and where group discussions may take place; a communication structure like "office hours", where student and teacher may communicate privately" (Hiltz, 1994: 6). In a conventional classroom, educators and students come together in a physical room for discussion, lectures and tests, whereas in a virtual classroom individuals "come together as telepresences for instruction" (Tiffin & Rajasingham, 1995: 10).

In traditional settings, other resources in addition to the teacher are important (e.g., textbooks, white boards and other laboratory equipment), whereas in a VLE different kinds of media make available information on one web page (Ryan et al., 2000). This feature makes VLEs

flexible tools as they enable tutors to support different teaching and learning styles (Waring & Boardman, 2004).

## 2.2. VLE FOR SIGN LANGUAGE LEARNING

The majority of Deaf/sign language related sites incorporate digital video (video streaming) and animated signing avatars (Verlinden et al., 2002) for delivering information in sign language. Since research has determined that Deaf people have poor reading and writing skills on spoken languages, information on the web is supported by visual material on simple and friendly interfaces (Debevc & Peljhan, 2004). Printed information (e.g., closed captions) consists a L2 to Deaf people and poses many obstacles on understanding the information presented online (Lee et al., 2004; Ohene-Djan et al., 2003), whereas online digital video helps Deaf people in understanding the information, while the material is presented in the language they are familiar with (Debevc & Peljhan, 2004).

In line with this, recent research (Lee et al., 2004) addressed the issue of creating Signing Webs; that is a collection of Web pages created by a particular signing community (e.g., American Sign Language, British Sign Language) and linked together by sign language based connections. The idea is to create Web pages based on video signing where signing links allows hyperlinking within video and/or animation. The development of such pages is based on the incorporation of an authoring tool, the SignEd, in order to author pages in sign language.

By considering the above definition of VLE, a virtual environment for sign language teaching and learning is the combination of Web pages with sign language content and CMC (e.g., e-mails, video conferencing) for online communication and collaboration (Figure 1). Deaf and hearing people meet online to a virtual space, like a website, in order to gain and share knowledge about a target sign language. There, the instruction is delivered mainly by video clips and text as well as through CMC.

Usually, the video clips offer lectures in sign language surrounded by supplemental text-based content (Lee et al., 2004). Some videos have subtitles, which students with good sign language skills can follow and learn the language they do not understand (Debevc & Peljhan, 2004). Online video window (and animation window) has basic video control buttons (play, stop, pause and rewind), so that teachers and students are able to watch the video by jumping to specific scenes (backwards and forwards), which are interesting or difficult to understand.

A VLE is formed at the Centre for Deaf Studies (CDS), in Bristol University, U.K. for BSL learning purposes. In particular, both tutors and students (Deaf and hearing) are provided with access to the following two main web resources for BSL learning, which are both developed in the CDS:

- SignStation: [www.signstation.org](http://www.signstation.org)

- DeafStation: [www.deafstation.org](http://www.deafstation.org)

Although students and teachers work mainly with these two, there are other BSL websites, which they retrieve for their learning.

SignStation is a website devoted to people who want to know more about BSL and Deaf people in the workplace. It offers a complete BSL course and it consists of an online BSL dictionary with sign-search facilities; an interactive BSL course “The Company”, which includes dialogues, vocabulary, grammar explanations and interactive exercises (Figures 2-3); interactive sign awareness video “A-Z of sign”; and a test yourself quiz with multiple choice questions.

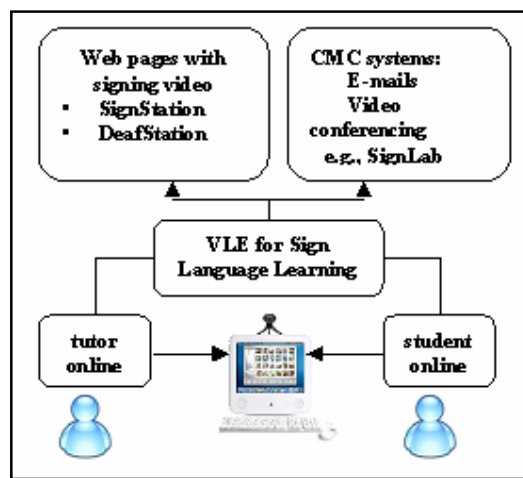


Figure 1: VLE overview for sign language learning

“The Company” is a teach -yourself BSL course based on the theme of a Deaf Design and Building company. Using a storyline of a young Deaf person joining the company and working through to a full scale, on-site building project, the videos show dialogues of increasing complexity. With each dialogue there are illustrated grammar explanations, actual exercises for students to carry out as well as further information on Deaf people and sign language (Figure 2). Like all language courses, there is also a vocabulary list which students can consult at any time and which they can compare with what is being signed in the dialogues.

One of the key features of SignStation is the possibility to search for a sign through a full dictionary of BSL, which can be accessed by text, or through a unique picture interface for different categories. By clicking on the objects in the picture, students can reach the corresponding sign (Figure 3). There are over 5,000 signs available online, which users can use from a mobile phone too.

DeafStation is a website where teachers and students have access to authentic Deaf produced video material concerning news, sports, health, travel, entertainment, and humour. This is a large zone of Deaf material that is updated almost everyday. Especially the news operates everyday, Monday to Friday.

These websites can be used either during classroom time or off-site, when it is convenient to students. Based on current practices, tutors use these sites to supplement parts of their courses and assign to their students project work, where students are required to identify and find certain information about Deaf culture and BSL (e.g., BSL poetry video clips) or analyse BSL in terms of grammar and syntax. In this case, students watch over and over the video clips and then gloss their content.

VLE in the CDS is also formed by the use of a videoconferencing system, SignLab, which is based on the network connection of Apple Mac computers to a central 360 GB server within CDS. In essence, SignLab is a collection of folders, the Home Directories, the Staff Homes, the Teaching Resources and the Staff Private. These folders are on the server and everyone identifies his/her workplace when logging in SignLab.

This system works with Panda software, which is developed exclusively at the CDS and it is used for asynchronous videoconferencing between students and tutors (Figure 4). This is a fundamental element of BSL courses with powerful social dimensions within the department and the University of Bristol. Panda enables recording and posting video messages to each other, in sign language, in an asynchronous way.

Panda-produced materials are of two kinds: (a) video clips prepared by the teachers by filming themselves signing or by digitising old VHS videos (e.g., conversations between Deaf individuals, BSL stories); (b) conversations between tutors and students relating to specific tasks. In this case, students film themselves signing and post their work to their tutors. Then, tutors assess students' work by inserting their comments into the students' original video clips. All Panda-video material is stored into the Teaching Resources folder in a common server, where students have access and retrieve them according to tutors' indications.

This VLE offers a set of basic and complementary services, which are integrated into the teaching and learning of BSL:

- Direct learning with Web materials; students are able to access useful information for BSL learning, which helps to organise and structure the content of their learning without dealing with problems of disorientation or 'information overload' (Pastor, 1998).
- Interactivity for self-learning and assessment; Students have the opportunity to directly interact with their particular activities as well as with their tutors on specific activities through Panda. The latter is the most important feature of VLE since it enables question - answer exchanges between tutors and students on particular tasks. In addition, students can search and observe for their own answers from resources

available (e.g., Web and Panda resources) and thus, construct BSL knowledge.

- Student and tutor technical support. There is already evident the need for more ICT training for tutors and students before using this VLE. Therefore, at the beginning of each academic year students get trained to use Panda and SignLab for their courses. Tutors are also supported by technical staff when encounter problems with developing and creating material with Panda and other technology.

### 3. BIBLIOGRAPHICAL REFERENCES

- Baym, N.K. (1995). The Emergence of Community in Computer - Mediated Communication. In S.G. Jones (ed.), *Cybersociety. Computer-Mediated Communication and Community*, (pp. 138-163). California: Sage Publications.
- Debevc, M. & Peljhan, Z. (2004). The Role of Video Technology in On-Line Lectures for the Deaf. *Disability and Rehabilitation*, 2; 26(17), 1048--59.
- Hiltz, S.R. (1994). *The Virtual Classroom. Learning Without Limits via Computer Networks*. Norwood, New Jersey: Ablex Publishing Corporation.
- Jones, S.G. (1995). Understanding Community in the Information Age. In S.G. Jones (ed.), *Cybersociety. Computer-Mediated Communication and Community*, (pp. 10-35). California: Sage Publications.
- Jordan, T. (1999). *Cyberpower: The Culture and Politics of Cyberspace and the Internet*. London, New York: Routledge.
- Lawley, E.L. (1994). The Sociology of Culture in Computer-Mediated Communication: An Initial Exploration. <http://www.itcs.com/elawley/bourdieu.html>
- Lee, D.G., Richards, J., Hardman, J., Soudain, S., & Fels, D. (2004). Creating Sign Language Web Pages. In: J. Klaus, K. Miesenberger, D. Burger, & W.L. Zagler (Eds), *Computers Helping People with Special Needs. 9th International Conference, ICCHP 2004, Paris, France, July 7-9, 2004, Proceedings*. (pp. 1088-1095) Berlin: Springer.
- Martin, M. (2005). Seeing is Believing: The Role of Videoconferencing in Distance Learning, *British Journal of Educational Technology*, 36(3), 397--405.
- Ohene-Djan, J., Zimmer, R., Gorle, M., & Naqvi, S. (2003). A personilisable Electronic Book for Video-based Sign Language Education. *Educational Technology and Society*, 6(4), 86--99.
- Pastor, E. (1998). Web tools and Web applications. In F. Verdeho & G. Davies (Eds.), *The Virtual Campus. Trends for Higher Education and Training* (pp. 207-210). London: Chapman and Hall.
- Reid, E. (1995). Virtual Worlds: Culture and Imagination. In S.G. Jones (ed.), *Cybersociety. Computer-Mediated Communication and Community*. (pp. 164-183). California: Sage Publications.
- Ryan, S., Scott, B., Freeman, H., & Patel, D. (2000). *The Virtual University. The Internet and Resource-Based Learning*. London-Sterling (USA): Kogan Page.

Tiffin, J. & Rajasingham, L. (1995). *In Search of the Virtual Class*. London and New York: Routledge.

Verlinden, M., Tijsseling, C., & Frowein, H. (2002). A Signing Avatar on the WWW. In I. Wachsmuth & T. Sowa (Eds.), *Gesture and Sign Language in Human-Computer Interaction: International Gesture Workshop, GW 2001, London, UK, April 18-20, 2001. Revised Papers* (pp. 169-172). Springer – Verlag Berling Heidelberg.  
<http://www.springerlink.com/media/7panqnxxxq49a1t>

[79trn/contributions/0/f/b/d/0fbdcv691m2qcv9d.pdf](http://79trn/contributions/0/f/b/d/0fbdcv691m2qcv9d.pdf)

Waring, M., & Boardman, K. (2004). Learning to Teach, Teaching to Learn: A Developmental Framework for Teacher Training. In D.S. Preston (ed.), *Virtual Learning and Higher Education* (pp. 1-13). Amsterdam-New York: Rodopi B.V.

Whiteman, JA.M. (2002). The Adult Learner in the Computer Mediated Environment. *ERIC Document Reproduction Service (EDRS)*, ED 467889, CE 08372

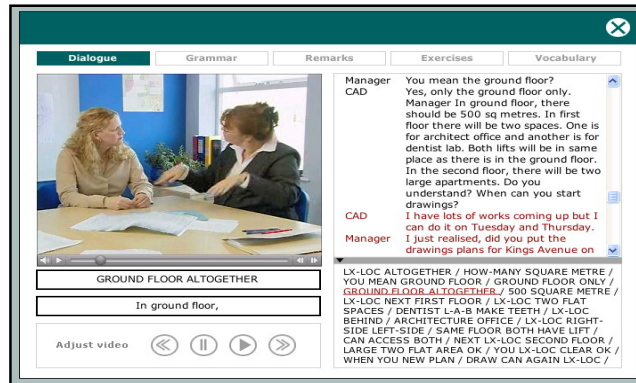


Figure 2: Sample of BSL course online

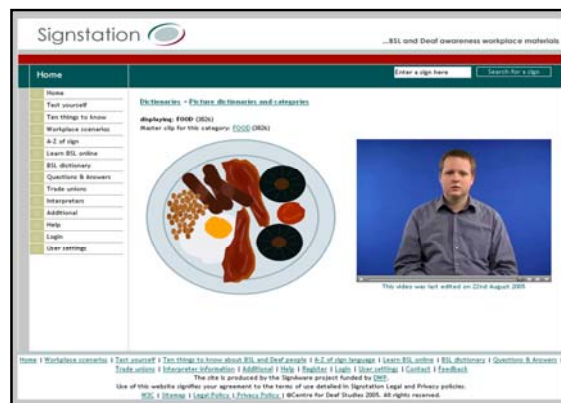


Figure 3: Sample of BSL dictionary online



Figure 4: Panda window with video file loaded