This is the final draft of an article to appear as: Braun, S., Davitti, E. and Slater, C. (2020). “‘It’s like being in bubbles’: affordances and challenges of virtual learning environments for collaborative learning in interpreter education.” *The Interpreter and Translator Trainer* 14(3).

‘It’s like being in bubbles’: affordances and challenges of virtual learning environments for collaborative learning in interpreter education.

Sabine Braun, Elena Davitti, Catherine Slater, University of Surrey

ABSTRACT

We report on a study evaluating the educational opportunities that highly multimodal and interactive Virtual Learning Environments (VLE) provide for collaborative learning in the context of interpreter education. The study was prompted by previous research into the use of VLEs in interpreter education, which showed positive results but which focused on preparatory or ancillary activities and/or individual interpreting practice. The study reported here, which was part of a larger project on evaluating the use of VLEs in educating interpreters and their potential clients, explored the affordances of a videoconferencing platform and a 3D virtual world for collaborative learning in the context of dialogue interpreting. The participants were 13 student-interpreters, who conducted role-play simulations in both environments. Through a mix of methods such as non-participant observation, reflective group discussions, linguistic analysis of the recorded simulations, and a user experience survey several dimensions of using the VLEs were explored including the linguistic/discursive dimension (interpreting), the interactional dimension (communication management between the participants), the ergonomic dimension (human-computer interaction) and the psychological dimension (user experience, sense of presence). Both VLEs were found to be capable of supporting situated and autonomous learning in the interpreting context, although differences arose regarding the reported user experience.

KEYWORDS

Virtual learning environment, 3D virtual world, videoconferencing, video remote interpreting, presence, interpreter education

1. Introduction

Communication technologies can be used with a dual purpose in the context of interpreter education, namely to facilitate conventional training through distance learning or in a blended learning approach, and to train students in technology-enabled modalities, i.e. remote interpreting (Braun 2019). The present article focuses on this dual role by examining the affordances and constraints of two types of Virtual Learning Environment (VLE) in the context of dialogue interpreting, namely a videoconferencing platform and a computer-generated 3D virtual world.

The term VLE is used here to describe a virtual environment that can be exploited to support individual and collaborative learning, especially by providing a social ‘space’ where learning can take place. VLEs aspire to create a sense of presence or immersion, i.e. of being mentally absorbed in the environment or an ‘illusion of non-mediation’ (Lombard and Ditton 1997, 9).

Prior to the emergence of VLEs, various software packages and online repositories were developed to support computer-assisted interpreter training (CAIT; for overview, see Sandrelli 2015). This was followed by corpus-based approaches using authentic speeches as training material (Bale 2015;

Sandrelli 2010), and a first generation of VLEs, which focused on supporting individual interpreting practice, based on recorded material, and/or sharing knowledge about interpreting (Class and Moser-Mercer 2013; Hansen and Shlesinger 2007; Ibrahim-González 2011; Mulayim and Lai 2015; Skaaden 2009; Tymczyńska 2009). By contrast, VLEs that are more conducive to collaborative learning have received little attention in interpreter education. Videoconferencing platforms have been used for ‘virtual classes’ in conference interpreter training (Biernacka 2018; Graves 2012), whilst their application in dialogue interpreter training is under-explored. Similarly, computer simulations and 3D virtual worlds, which have supported collaborative learning across many disciplines (Kim, Lee, and Thomas 2012), have rarely been considered in interpreter education (Braun et al. 2013; Ritsos et al. 2013; Sahin 2013; Vilijanmaa 2018). Our study aimed to fill this gap by focussing on VLEs that support collaborative learning in the context of interpreter education.

Whilst important for all types of interpreting, collaborative practice is particularly pertinent for dialogue interpreting. As a highly interactive and multimodal practice (Davitti 2013, 2019; Davitti and Pasquandrea 2017), dialogue interpreting requires learning environments that nourish the illusion of ‘being together’ and that recreate the multimodality of face-to-face encounters by providing a rich set of stimuli (Lombard and Ditton 1997). The design of such VLEs is all but trivial and needs to be underpinned by sound pedagogical principles and by the specifics and complexities of interpreter-mediated communication.

2. Virtual environments for collaborative learning in interpreting education

Socio-constructivist principles of learning provide a useful pedagogical point of departure. Social constructivism conceptualises learning both as a cognitive and social activity (Vygotsky 1978; Wenger, McDermott, and Snyder 2002), i.e. as a cognitive process of knowledge construction, which requires a social environment, as the knowledge a learner builds only becomes meaningful in interaction with others. In line with this, Wenger, McDermott, and Snyder (2002) emphasise the role of learner involvement, social interaction and social participation in learning and knowledge construction. Experimenting, as captured in Vygotsky’s (1978) notion of the zone of proximal development, and situated learning (Lave and Wenger 1991) are important, and learning should take place in professional contexts and in ‘communities of practice’ (Wenger, McDermott, and Snyder 2002). The importance of ‘situated learning’ has also been highlighted in translator and interpreter education (Haro-Soler and Kiraly 2019; González-Davies and Enríquez-Raído 2016; Kiraly 2000), as has the usefulness of the concept of ‘communities of practice’ (D’Hayer 2012).

However, although situated learning has been highlighted as desirable, real professional practice, which would provide situatedness, is not always accessible for trainee interpreters. Whilst it is possible for students to use, for example, the UN and European Parliament websites, interpret the speeches and proceedings that are available at these sites and compare their own performance with that of professional interpreters, other settings and materials are more difficult to access. In addition, real-life situations may not always be the most suitable way of providing situatedness, especially for beginners. Pedagogically guided simulations may be more useful, but traditional, classroom-bound teaching has limitations when it comes to simulating real-life practice. Highly interactive and multimodal VLEs offer the potential to bridge this gap, as they can create situatedness by allowing students to immerse themselves in a given situation. While there is no question that such VLEs should provide an alternative to all aspects of presence teaching, it is important to consider which aspects of learning VLEs can support, as well as the extent to which VLEs can offer learners a similar experience of situatedness. In accordance with the principles outlined above, one of the key points to establish is the extent to which different VLEs satisfy both cognitive and social constructivist principles of learning.

Against this backdrop, the overall aim of our study was to evaluate the effectiveness, efficiency and affordances of two types of VLE in relation to the professional requirements for dialogue interpreting in business and community settings. The study was part of the European project EVIVA (Evaluating

the Education of Interpreters and their Clients through Virtual Learning Activities; www.virtual-interpreting.net). One of the environments was a videoconferencing platform, similar to those used for remote interpreting (Braun 2019). The other environment was a multiple-user 3D virtual world, in which users interact with the environment and with other users through virtual representations of themselves (avatars). This type of VLE is considered to be an engaging environment that fosters situated learning and that can help overcome some of the problems with motivation and participation associated with older VLEs because of the sense of presence it generates (Calongne 2008). Our evaluation included assessing the capability of these environments to bridge the worlds of education and work, and to promote the acquisition of digital competence in the field of interpreting, with a view to developing competence in distance/remote interpreting. Moreover, as dialogue interpreting is characterised by the continual role changes of the interlocutors (speaker/listener), requiring interpreters to master both the linguistic and cultural transfer between languages and the management the interactional space (Wadensjö 1998), a further aspect of the evaluation was the extent to which training methods/practices associated with different types of VLE can cater for both aspects of dialogue interpreting.

Although this study centred on the appropriateness of the two virtual environments in an educational context, it also constitutes one of few studies that have investigated interpreter-mediated communication in multi-point video/teleconferences. To the best of our knowledge, the only systematic investigation of three-point video links with interpreters was conducted by Braun (2004, 2007) while Rosenberg (2007) included multi-point teleconferences involving interpreters in his examination of telephone interpreting.

3. Methods of evaluation

Given the dearth of knowledge about the use of VLEs for collaborative learning in interpreter education, it was considered appropriate to adopt a qualitative approach based on observation and reflection to generate rich sets of data. The observations and participants' reflections were complemented by a questionnaire focussing on user experience, learning experience and learner preferences.

3.1 Participants

The participants formed a convenience sample drawn from interpreting students on the MA Translation and Interpreting programme at the University of Surrey, working in DE, ES, FR and ZH, all paired with EN (N = 13). The students were all female, aged between 22 and 54, and all held an undergraduate degree in languages and/or translation/interpreting. They self-identified as advanced (1), intermediate (5), novice (5) or inexperienced (2) users of computer-based learning environments, and advanced (1), intermediate (1), novice (8) or inexperienced (3) users of CAIT.

3.2 VLEs used in the study

One of the two VLEs evaluated in this study was the videoconferencing (VC) environment Google+ Hangout, an open-source VC platform developed for the consumer market and capable of multi-point conferencing. The other was the bespoke 3D-VLE developed in the European project IVY – Interpreting in Virtual Reality (www.virtual-interpreting.net; Braun et al. 2013; Ritsos et al. 2013). The IVY project sought to simulate professional interpreting practice in business and community contexts by creating credible virtual locations (e.g. meeting rooms, presentation areas, medical consultation rooms) in which both trainee interpreters and interpreting clients could practice either individually or collaboratively. The environment was implemented in Second Life (SL),¹ a 3D environment which comes with ready-made and modifiable landscapes, buildings, rooms, objects and user-controlled characters (avatars).

The IVY environment has different modes in which users may work, namely the Interpreting practice mode, which gives access to prepared audio content, i.e. monologues and bilingual dialogues (Braun and Slater 2014); the Exploration mode, which is designed for clients to learn about how to work successfully with an interpreter (Braun et al. 2015); and the Live interaction mode, which enables all

users (students and clients) to practise together, making use of the ‘voice chat’ in Second Life. The present study focused on the Live mode.

In order to create situational awareness for the procedures of a real-life interpreting assignment (i.e. arrival, meeting the client, introduction, management of interactional space, etc.), the IVY environment also has a Visitor/Evaluation Centre with a reception area, from which the various virtual locations can be accessed. The multimodal cues in each virtual location (e.g. characteristic furniture items) create situatedness. Each location offers different seating arrangements, for example to create a sense of proximity to, or distance from, the speakers. A menu system in the form of a heads-up display (HUD) gives access to all functionality and virtual locations (for a comprehensive description of the IVY environment, see Braun et al. 2013; Ritsos et al. 2013).

3.3 Procedure

The study was embedded in standard classes in semester 2 of the 1-year MA programme and began with an induction and familiarisation phase at the beginning of the semester. A 90-minute induction was arranged to demonstrate the VLEs to the students and to provide them with brief guidelines for each VLE. In addition, the students received a face-to-face induction to role-playing in the interpreting context in order to develop basic role-play competence. This was followed by a two-week familiarisation phase (outside class time) during which the students used the VLEs for role-playing to ensure that a lack of familiarity with the VLEs would not adversely affect the study.

The main part of the study included a total of 15 simulations, i.e. eight in the 3D-VLE (the IVY environment) and seven in the VC-VLE (Google+ Hangout). Each student participated in at least one simulation per VLE, either as interpreter or as interlocutor. The simulations were debates between two interlocutors, each with a given topic (e.g. a debate about climate change, a conversation between a tourist and a hotel manager to discuss a complaint, a conversation between a lettings agent and a university visitor). The students participating as interlocutors received role-play outlines to prepare for the topic approximately one week before the simulation. The student role-players were also responsible for providing the interpreter with a specific brief. Each simulation was followed by a group reflective session with the students. At the beginning of the reflective session, the students were asked to complete a questionnaire (see section 3.4).

All students used laptops of the same specification, which were provided by the university and which were equipped with a headset. The students used the university Wifi or, in some cases, the wired LAN connection in the university for the sessions.

3.4 Data collection

All simulations were observed by several members of the research team, who made field notes, and recorded the sessions using a screen capture tool (Camtasia) and an external camera to capture the student’s interaction with the computer.

The observation of the participants’ activity was complemented by a post-simulation group reflective session (outside normal class sessions) to discuss the students’ experience of the VLE. To facilitate the discussion, the students were given the recording of the relevant simulation prior to the reflective session to review it and identify points worthy of discussion. During the sessions, the recordings were watched as far as necessary to enable prompted recall. These retrospective sessions were recorded for later analysis.

A questionnaire was used to conduct a user and learning experience survey. The first part incorporated the User Experience Questionnaire (UEQ, <http://www.ueq-online.org>; Laugwitz, Held, and Schrepp 2008), which has been widely used to elicit users’ impressions, feelings and attitudes towards an interactive product such as a VLE after using it. As such, it consists of 26 7-point Likert-type questions,

intended to measure usability and user experience aspects on six dimensions arising from the questionnaire's scales, as defined by the authors of UEQ (see Table 1). A similar approach was successfully used to evaluate the usability/user experience of the original IVY 3D environment (Ritsos et al. 2013).

Table 1. Dimensions of the UEQ (<http://www.ueq-online.org>).

Overall	Attractiveness	Overall impression of the product. Do users like or dislike it?
Usability	Perspicuity	Is it easy to get familiar with the product and to learn how to use it?
	Efficiency	Can users solve their tasks without unnecessary effort? Does it react fast?
	Dependability	Does the user feel in control of the interaction? Is it secure and predictable?
User experience	Stimulation	Is it exciting and motivating to use the product? Is it fun to use?
	Novelty	Is the design of the product creative? Does it catch the interest of users?

The second part of the questionnaire contained two further sets of 7-point Likert-type questions, one relating to the participants' learning experience in relation to each VLE and another eliciting their preferences. The items in the learning experience section sought to elicit the participants' overall impression of working with the VLEs (e.g. 'I felt comfortable interpreting in this environment') and of the support they provide for interpreter training (e.g. 'I feel that the tool has helped me to improve my interpreting skills'). The preferences section was customised for each VLE (to ensure that references to avatars, for example, occur only in relation to the 3D-VLE) and investigated the participants' attitudes towards specific characteristics of the respective VLE (e.g. 'I like to be represented by an avatar', 'I felt a sense of presence (feeling of "being there") in the environment').

3.5 Data processing and analysis

The data collected in the study were processed and analysed using a combination of different methods. The UEQ part of the questionnaire was analysed using the tool that comes with the UEQ, which provides basic quantitative data on user experience by comparing the recorded answers with a benchmark data set, containing data from over 4000 participants evaluating over 150 different products (business software, web pages, online shops, social networks). The findings section provides benchmarked mean scores for each of the six dimensions of the UEQ. The UEQ analysis was complemented by a statistical analysis of the learning experience questions and the VLE-related preferences. Answers to open-ended questions were analysed qualitatively with a focus on user preferences.²

The role-play simulations were analysed with regard to linguistic and interactional aspects in order to identify and understand the learning processes and strategies the students used in the VLEs, and to ascertain how conducive (or otherwise) the VLEs were in supporting the application of these. The analysis was based on interactionist frameworks of dialogue interpreting (Baraldi and Gavioli 2012; Davitti 2013; Mason 2006; Wadensjö 1998) and included, for example, an analysis of the 'settling-in phase', the opening and closing sequences, turn management, the role of embodied communication, and the human-computer interaction, with a view to identifying characteristic patterns for each VLE.

The reflective sessions were analysed for references to different phases and dimensions of the role-plays, including the preparation phase, the settling-in phase, the linguistic/discourse dimension, the interactional dimension, and the technological dimension focussing on ergonomic issues and issues of human-computer interaction. Where possible, references in the discussion were related to specific instances in the simulations in order to aid the interpretation of observed behaviours and strategies.

The insights from the observations and reflective sessions were drawn together in a template covering the dimensions outlined above. This enabled the research team to elicit links between the students' level of awareness, the student's preparation of the interpreting task, the use of the VLEs during the simulations including challenges and how they were dealt with, the reflection upon this process, and the instances where learning occurred, i.e. where students seemed to have acquired or expanded their skills through engaging with the VLE. This ultimately provided insights into the VLEs' role in raising the participants' awareness of the different aspects of interpreting competence (including for remote interpreting), and diagnosing and developing this competence.

4 User experience: findings

This section reports the findings from the two parts of the questionnaire and compares the students' experience of using the two VLEs.

4.1 UEQ

As explained above, the UEQ scores are presented as mean scores benchmarked against a set of over 4000 questionnaire responses, which is made available by the developers of UEQ as a reference data set. The benchmark classifications are 'excellent' (meaning that the results are in the range of the 10% best results in the benchmark dataset), 'good' (10% of the results in the benchmark dataset are better and 75% are worse), 'above average' (25% of the results in the benchmark dataset are better and 50% are worse), 'below average' (50% of the results in the benchmark dataset are better and 25% are worse) and 'bad' (in the range of the 25% worst results).

In relation to the VC-VLE, participants evaluated all factors as 'excellent', apart from novelty, which was slightly below average (see Figure 1). The low novelty rating is unsurprising, given that videoconferencing technology has been available for a long time. Irrespective of this, the participants' ratings suggest that the user experience associated with this VLE is high, as expected from a mainstream, consumer-oriented videoconferencing platform. However, some technological problems were reported, especially with the audio feed ('sometimes I could not hear other participants properly') and, less frequently, with the video feed ('sometimes the picture was frozen for a few minutes I could not see one the other speakers'). Most of these issues can be attributed to Internet connectivity and/or low processing power.

Figure 1. UEQ results for the VC-VLE showing mean scores and comparison to benchmark dataset.

In relation to the 3D-VLE, all factors were evaluated as 'above average', apart from 'dependability', which was marginally below average (see Figure 2). The technical problems reported for this VLE suggest that limitations in the processing power and graphics rendering capabilities of the computers used in the simulations had an impact on the fluidity of the interaction with the environment and on the perceived realism and, consequently, on the attractiveness and dependability of the environment ('at one instance it seemed as if the microphone had stopped working, could not hear my own voice through headphones anymore').

Figure 2.UEQ results for the 3D-VLE showing mean scores and comparison to benchmark dataset.

On the other hand, various positive remarks were recorded, mainly referring to the aesthetically pleasing environment (e.g. ‘a very stimulating environment that helps in practicing’) or the potential of the technology (e.g. ‘I could see myself using the technology for a real situation’, ‘interesting experience interpreting remotely – new way of using technology – innovative alternative to face-to-face role-plays.’). We can therefore assume that the 3D-VLE can appeal to users overall and if the technical problems can be mitigated, the resulting user experience would be high. This is corroborated by the learning experience and preference ratings.

4.2 Perceived learning experience and preferences

The responses regarding the learning experience are presented as summative scores, depicting the overall learning experience for each VLE (Figures 3 and 4). Based on four questions, using 7-point Likert scales the minimum and maximum scores are 1/28 respectively. The average score is shown as a blue circle, labelled as A. The learning experience associated with both VLEs was rated as above average (20.38 for the VC-VLE and 18.46 for the 3D-VLE). The results are thus on par with, or better than, the reported user experience.

Figure 3.Learning experience scores for the VC-VLE.

Figure 4. Learning experience scores for the 3D-VLE.

The results of the preferences section of the questionnaire (also based on 7-point Likert scales) are presented as measures of central tendency, as they were adapted to the specific characteristics of the VLE.

Q#	Question	Mean	SD	Median	Mode
1	I think that gestures are important in communication	5.9	1.9	7.0	7.0
2	I like to rely on facial expressions in communication	5.8	1.3	6.0	7.0
3	In distance communication, I like to be visible to others with video or picture	5.7	1.2	6.0	6.0
4	I like to be represented by an avatar	2.3	1.1	2.0	1.0
5	The environment is attractive for communicating with others	5.6	1.2	6.0	6.0
6	The environment is attractive for role-plays	5.4	1.6	6.0	7.0
7	The environment is attractive for interpreting practice	6.2	1.6	7.0	7.0
8	I felt a sense of presence (feeling of being there) in the environment	5.7	1.4	6.0	7.0
11	The video was useful for the task	6.4	0.6	6.0	7.0
12	Seeing more than one video image was distracting	2.4	1.5	2.0	1.0

Figure 5. Preference scores for the VC-VLE.

Q#	Question	Mean	SD	Median	Mode
1	I think that gestures are important in communication	6.1	1.5	6.0	7.0
2	I like to rely on facial expressions in communication	5.9	0.9	6.0	6.0
3	In distance communication, I like to be visible to others with video or picture	5.2	2.0	6.0	7.0
4	I like to be represented by an avatar	3.5	1.4	4.0	4.0
5	The environment is attractive for communicating with others	4.7	1.5	5.0	4.0
6	The environment is attractive for role-plays	5.5	1.7	6.0	7.0
7	The environment is attractive for interpreting practice	5.1	1.9	6.0	6.0
8	I felt a sense of presence (feeling of being there) in the environment	4.2	1.7	4.0	3.0
9	The avatar's gestures and movements were useful for the communication	2.2	1.3	2.0	1.0
10	The avatar's facial expressions were helpful	2.6	1.8	2.0	1.0

Figure 6. Preference scores for the 3D-VLE.

The participants found the VC-VLE more attractive for communicating with others than the 3D-VLE (as suggested by mean values of 5.6 and 4.7 for Q5), but found both environments attractive for role-playing (Q6: 5.4; 5.5) and for interpreting practice (Q7: 6.2; 5.1). The sense of presence was judged to be higher in the VC than in the 3D-VLE (Q8: 5.7 vs. 4.2). The participants' general perception that embodied communication including gestures (Q1) and facial expressions (Q2) is important appears to play a key role in these preference ratings, as does their strong preference for being physically visible (Q3) as opposed to being represented by an avatar (Q4). Although it is noteworthy that the participants' attitude towards being represented by avatars (Q4) improved after they used the 3D-VLE (from 2.3 post-VC-VLE to 3.5 post-3D-VLE), the avatars' gestures, movements and facial expressions were generally not perceived to be particularly useful (Q9/10: 2.2 and 2.6) whilst the video feed was

considered useful (Q11: 6.4). The novelty of the 3D-VLE may have contributed to the assessment, and the most influential factor appears to have been the use of avatars to represent participants. Further details of the students' perceptions in relation to these aspects will be explored in the next section.

5 Collaborative learning through role-plays: findings

This section reports the trends and patterns that emerged from the qualitative analysis of the simulations and reflective sessions. The reporting is divided into observations and reflections relating to the settling-in phase and the actual interpreting phase.

5.1 Settling-in phase

The settling-in phase was examined separately from the actual interpreting phase in order to explore how the participants immersed themselves in their respective roles and which factors contributed to or impeded this process. The settling-in phase was handled quite differently in the two VLEs. In the VC-VLE, the average time taken to complete this phase was very short (approximately one minute) and mainly consisted in verifying that all participants could hear and see each other. There was a noticeable tendency for students to take many contextual factors (such as introducing each other) for granted. However, in one case, the interpreter introduced herself to one of the speakers on the basis of a prior agreement by the students that the two speakers would know each other and that the interpreter had been commissioned by one of them. In another instance, one of the speakers explained that the interpreter had been recruited to avoid communication difficulties; this was followed by the interpreter fully introducing herself before starting the actual dialogue. These two instances suggest that some students were able to immerse themselves in their roles straight away, thus considering this phase an integral part of an interpreting assignment. Introductions were also discussed in all reflective sessions, given that an awareness of how to handle the introductions is also important for remote interpreting (see also Davitti and Braun in this special issue).

Prior to the start of the role-play, some students adjusted the webcam to make sure they were in frame, thus signalling an awareness of being visible. This contrasts with a tendency (particularly on the part of interpreters) not to adjust the camera during the interpreting phase, which in some cases resulted in the interpreter being seated too closely to the screen (thus potentially being perceived as 'intimidating') or appearing partially out of frame (see Figure 7).

Figure 7. Interpreter partially out of frame in the VC-VLE.

These aspects were discussed in the reflective sessions, which played a key role in raising students' awareness during this study, thus showing the opportunities that the VLEs combined with introspection/reflexive practice offer for noticing problems, analysing the situation and learning from it. Raising awareness for visual aspects of the VC is also highly relevant to developing skills for remote/distance interpreting where the fragmented environment requires more explicit introductions and use of embodied behaviour.

In the 3D-VLE, the average time taken to complete the settling-in phase was longer than in the VC-VLE (on average 2.5 minutes, with one outlier taking almost six minutes). This was partially due to the fact that students had to perform more actions in this VLE (e.g. finding a suitable virtual room, choosing seats, adjusting the view of the VLE). Overall, no consistency was found in the way the settling-in phase was handled, and it was conducted with varying degrees of efficiency. There was evidence of stepping in and out of roles, as shown by language switching, giggling, and mutual address by first name. One of the reasons provided for not being able to sustain their roles during the settling-in phase were technical problems.

In the majority of role-plays, it was possible to identify a clear-cut move that signalled the end of the settling-in phase and the start of the actual dialogue. This was often performed by the speaker initiating the dialogue, although in some cases, the interpreter instigated this transition, acting as a coordinator (e.g. ‘are we all comfortable? If we are all ok we can start’, S3). This was not always done consciously by student-interpreters, as highlighted during the reflective sessions. When discussed *a posteriori*, they realised that such a move may present them as being ‘in charge’ and professional. At the same time, this move is characteristic of interpreter behaviour in configurations of distance interpreting where the primary participants are in different locations (Braun 2004, 2007). As such, the exploration of this move in the reflective sessions also contributed to raising the students’ awareness of coordination issues in distance interpreting.

Although not all students perceived the 3D-VLE functions as entirely intuitive, there were no major problems in the settling-in phase, which – as pointed out earlier – was preceded by a two-week familiarisation phase. While in some cases the choice of room, seating arrangement and view on the part of participants seemed to be well-informed and thought through (as exemplified in Figure 8, which mirrors the classic triangle of dialogue interpreting), in other cases, they seemed to be dictated by time constraints/pressure, convenience and/or a lack of confidence using the functionalities of the environment (as illustrated in Figure 9). The most extreme example was the case of an interpreter (S13) who kept her view from behind a pot plant throughout the assignment. In the reflective session, S13 commented that she did not know how to ‘see through the leaves’ but that one of the speakers (S9) had started the role-play session unexpectedly and that this had prompted her to focus on listening rather than adjusting her view of the environment.

Figure 8. Instance of an appropriate configuration and seating arrangement in the 3D-VLE.

Figure 9. Instances of inappropriate configurations and views in the 3D-VLE.

Although participants acknowledged the unsuitability of some configurations when this was addressed in the reflective sessions, they did not seem to be fully aware of the impact that their choices may have had on their overall experience within this environment. Contrasting opinions emerged about what would make a ‘good view’ in the 3D-VLE. Another interesting point in this respect is that, in general, students did not seem to realise that they would all see something different in the 3D-VLE.

5.2. Interpreting phase

On average, the time taken to complete the assignment in both environments was 25 to 30 minutes. The student-interpreters generally treated the assignments as professional assignments, as shown by the largely appropriate use and phrasing of their requests for clarification, a high degree of linguistic accuracy, and their selection of strategies for managing turn-taking.

One of the most common observations made by students in relation to the VC-VLE was the advantage of having access to each other’s embodied cues, which seems to be one of the key factors for the high rating of the ‘sense of presence’ indicator in the UEQ (particularly compared to the low scores for the same indicator for the 3D-VLE) and of the preference question about ‘sense of presence’. Nevertheless, interacting with their peers and being physically located in their normal training environment made it difficult for students to immerse themselves fully in the situation. There was consensus that the role-plays felt more relaxed than equivalent real-life situations would have been. This became manifest in instances of stepping out of role (e.g. giggling, language switching, etc.).

5.2.1. Linguistic and discourse dimension

Overall, the exchanges produced by the role-players were natural and reasonably impromptu, with participants responding to one another rather than reading out from a script. Student-interpreters reported that they had to adopt a number of coping strategies (e.g. eliminating repetitions, reformulations, chunking) to provide a fluent delivery, although this was not always done consistently. The issues mostly commented upon in the student-interpreter performances were, however, unnatural delivery (due to non-nativeness) and problems of coherence.

Coherence problems were not always repaired, and the source of the coherence problems remained obscure in the student self-reflections. However, drawing on previous research which suggests that coherence is reduced in video remote interpreting (Braun 2013), the reflective sessions were used to discuss the potential impact of physical separation on the coherence of primary participants' and/or interpreters' text production. This also included a consideration of relevant coping strategies, from increased monitoring of the interpreter's output (e.g. plausibility monitoring) to the deliberate use of cohesive ties and reminding clients of the need to articulate meaning in a clear and concise manner.

5.2.2. Interactional dimension

The data suggest that both VLEs have the potential to help students develop their interactional skills. In the VC-VLE, the possibility to access and, therefore, monitor participants' facial expressions and body language was perceived as the main added value of this platform. Students, particularly when acting as interpreters, highlighted the benefits of access to embodied cues for managing turn-taking, although in practice this was not always done appropriately (e.g. interpreter intervening too abruptly) or successfully (e.g. speaker not pausing in spite of interpreter's gesture).

In relation to the 3D-VLE, the opportunity to simulate the context in which a real-life environment would take place was highlighted as a positive aspect by many students, despite the 'sense of presence' indicators being rated quite low across the group. The relatively static avatars, which performed only limited movements and did not show facial expressions, seem to have prevented students from completely immersing themselves in their roles and from experiencing the full benefits of performing interpreting in a real-life setting.

A further shortcoming, described by most students as having an impact on the handling of the interactional dimension, was the lack of visual interaction in this environment. For example, the student-interpreters said that because they were aware that the other participants could not see them, they paid less attention to monitoring of the visual aspect of their own performance. Although the students generally maintained eye contact with the screen and showed engagement with the avatars representing the interlocutors (for example, by nodding despite being aware of their own invisibility), the video recordings of the simulations also provided evidence of somewhat distracted/disengaged behaviour (e.g. sitting back in chair, moving the mouse around, adjusting peripheral equipment, see Figure 10) during the interpreter's rendition or other-speaker talk.

Figure 10. Example of student's disengaged behaviour in the 3D-VLE.

In terms of turn management, a lack of visual access made it more difficult for participants to identify the boundaries of turns and, consequently, to signal when they were ready to take/relinquish the floor. Although this was not immediately realised by the students, this lack of visual access forced them to develop alternative (verbal) strategies for handling turn-taking, thus enhancing their interactional competence, particularly in terms of distance interpreting.

5.2.3. Technological dimension

With regard to the VC-VLE, the reflective sessions provided little insight into the students' technological awareness or competence, but overall the students seemed to feel reasonably at ease in this environment. Noticeably, however, the students refrained from making any adjustments to the VC-VLE (e.g. camera, volume, etc.) once the interaction had begun (see above – settling-in phase), perhaps fearing that this would create technical problems.

Among the distracting factors characteristic of the VC-VLE was the way in which the video feed presented in the main video window was selected. The selection was microphone-driven. While this normally meant that the current speaker would appear in the main window, it also meant that any noise picked up by a microphone could cause the video feed to 'jump' to the site from which the noise originated. To prevent this, students had to mute their microphones when it was not their turn to speak, which, however, represented an additional task adding to their cognitive load (particularly for the interpreter).

Another limitation of the VC-VLE used in this study was that the current speaker always saw the previous speaker's video feed in the main window. This meant that the interpreters saw the recipients of their rendition only in the thumbnail view in which all non-speaking participants are displayed in Google+ Hangouts, making it difficult to capture all the recipients' immediate reactions.

In relation to the 3D-VLE, except for a few cases, students showed a lack of confidence when performing actions such as sitting their avatar down, changing/adjusting the viewing angle, and switching the microphone on and off, especially during the dialogue. Among this VLE's perceived distracting factors were the avatars' involuntary gestures and their lack of facial expression as well as, in some cases, their inappropriate outfits for a work meeting. Furthermore, some students found it difficult to distinguish their own avatar from the avatars representing the other participants (despite the green waves appearing above the avatar which is currently speaking). All these factors seem to have contributed to the difficulty for the students to get a sense of presence and to be fully immersed in the environment.

6 Discussion

The evaluation highlighted the strong pedagogical potential that the selected types and tokens of VLE offer for collaborative learning in the context of dialogue interpreting and, more broadly, for different dimensions of learning (psychological, cognitive and social) that have been highlighted in educational research.

Both VLEs provided copious opportunities for practice, knowledge construction and social interaction/participation which would not be available through onsite, in-class practice only. Whilst credible access to different topics, settings and speakers can be provided effectively through recorded learning material, the use of the two VLEs for role-play simulations also contributed to the social aspect of learning, by enabling the students to experience authentic reactions from others and to see the consequences of their own strategies and behaviours (Wadensjö 2014).

An important motivation for exploring the VLEs was to address the situatedness gap of a traditional classroom environment, especially for situations of business and community interpreting. The 3D-VLE

with its bespoke virtual locations was able to bridge this gap more effectively than the VC-VLE but the comparison between the two VLEs revealed a number of nuances that merit further exploration.

The effectiveness of the VLEs seems to be strongly linked to the perceived sense of presence that they were able to generate. The strong point of the VC-VLE in this respect was that it allows access to embodied cues, which was thought to support the development of a sense of togetherness. In one student's description, the VC-VLE was 'just like we're sitting face-to-face with each other' (S11). However, the three-way communication link, which meant that each participant was seen in their own location, limited the sense of presents for some students. Highlighting this, one student said of the VC-VLE that 'it's like being in bubbles' (S5). Furthermore, the participants' locations were mostly classrooms, which did not have the look and feel of professional environments.

In the 3D-VLE, by contrast, the fact that the avatars were in the same virtual location created/maintained the illusion of non-mediation and co-presence. In addition, the purpose-built 3D environment, which is a rich multimodal environment offering several 'icons' of reality to stimulate perception, helped the students situate the dialogues. Some students felt that the 3D-VLE 'places the interpreter in a near-real context' (S8) and that it 'can be used to simulate certain situations that can't be simulated in class' (S1). However, the lack of access to visual cues from the remote participants, especially facial expressions, appears to have been the crucial factor overriding the potential offered by the 3D-VLE. Some students nevertheless pointed out an advantage in terms of feeling less exposed and less self-conscious, which may be valuable in the initial stages of training.

Irrespective of their drawbacks, both environments raised the students' awareness of important interactional elements and for the need to multi-task in interpreting. In different ways, both environments also highlighted the importance of accessing the other participants' non-verbal cues, especially for the purposes of monitoring and coordinating the communication. In the VC-VLE, the visual access to the participants' immediate emotional responses to what was being said/interpreted was perceived as a useful way of getting feedback on their delivery and as facilitating the interpreting task. In the 3D-VLE, the absence of access to these cues meant that students had to explore other monitoring and coordination strategies.

In relation to the 3D-VLE, students highlighted the need to 'feel more connected with their avatars', which could be achieved with avatars that can produce more facial expressions and co-speech gestures to perform basic interactional tasks multimodally, as in face-to-face interaction (e.g. to request speakers to pause if their turns are too long). This could be complemented by the possibility to customise avatars (e.g. clothing, names, etc.) so as to maximise the way they reflect participants' roles, thus making it easier to identify with them during the simulation.

7 Conclusions

As a contribution to technological and pedagogical innovation in interpreter education, this study evaluated the potential of two highly multimodal VLEs, i.e. a videoconferencing platform and a 3D virtual world, for collaborative learning in the context of interpreter education. A specific aim was to explore the VLEs' support for the different dimensions of dialogue interpreting ('translation' and 'co-ordination') and different dimensions of learning. In addition, the study considered whether the two VLEs can achieve a dual purpose of supporting the development of interpreting skills and raising students' awareness of the specific challenges of remote interpreting.

Despite the small sample size, which is one of the main limitations of the study, it is worth noting that both environments received above-average user experience and learning experience ratings and were perceived as adequate tools for interpreting practice. This suggests that the environments were thought to support collaborative learning. Both VLEs accommodated the learning preferences expressed by our students in many respects, although the students also acknowledged that VLEs vary in the support they provide for different dimensions of learning.

The use of the VLEs created an opportunity for the students to explore issues of distance interpreting, which has been shown to magnify familiar challenges of, and add new challenges to, interpreting (see Braun 2019 for recent overview). For example, as in real-life situations of distance interpreting, the VLEs amplified the need for interaction management and encouraged the development of alternative interaction strategies, broadening the students' interactional competence and, ultimately, their adaptive expertise.

To return to the theoretical framework guiding this study, i.e. the socio-constructivist principles suggesting that learning thrives on active participation, interaction, and the availability of a rich set of stimuli for constructing relevant knowledge and skills, this study also highlights the positive contribution that the two types of VLE can make in this respect. As complex multimodal learning environments they offer rich stimuli for interaction with the environment itself and with others.

A point worth noting in relation to implementing the main socio-constructivist principles is the positive role of the reflective sessions with the students. These sessions were instrumental in helping students to identify and appreciate various interpreting problems, and – corroborating Skaaden's (2017) study – to build confidence, and develop their professional knowledge and identity.

In terms of the practical implementation of VLEs in real-life educational contexts, there are, of course, several broader points to be considered. First, while VLEs are becoming more accessible due to technological advances, and while their use has increased rapidly since the beginning of the Coronavirus pandemic, their availability does not guarantee appropriate and successful use. Our study provides copious evidence for the crucial importance of learner preparation and continuous coaching support. Second, although recent months have demonstrated that distance learning solutions can be implemented rapidly, the collaborative effort required to create bespoke VLEs and/or adapt existing VLEs to suit the specific requirements of the interpreting context must not be under-estimated. Finally, at institutional level, current recruitment and teaching models, where interpreting tutors are often paid by the hour to cover specific language combinations, are not helpful for integrating technologies. The path from developing appropriate VLEs to integrating them as a sustainable solution creates further challenges, which need to be addressed by concerted, inter-institutional efforts.

Notes

1. Second Life was developed by Linden Research Inc® and launched in 2003 (www.secondlife.com).
2. The questionnaire analysis was prepared by P. Ritsos as part of the EVIVA project evaluation report (Braun et al. 2015).

References

- Bale, R. 2015. "An Evaluation of Spoken Corpus-Based Resources in Undergraduate Interpreter Training." *International Journal of Applied Linguistics* 25 (1): 23–45. doi:10.1111/ijal.12036.
- Baraldi, C., and L. Gavioli. 2012. *Coordinating Participation in Dialogue Interpreting*. Amsterdam: Benjamins.
- Biernacka, A. 2018. "Virtual Classes as an Innovative Tool for Conference Interpreter Training." *e-mentor* 5 (77): 30–35. doi:10.15219/em77.1386.
- Braun, S. 2004. *Kommunikation unter widrigen Umständen? Fallstudien zu einsprachigen und gedolmetschten Videokonferenzen*. Tübingen: Narr.
- Braun, S. 2007. "Interpreting in Small-Group Bilingual Videoconferences: Challenges and Adaptation Processes." *Interpreting* 9 (1): 21–46. doi:10.1075/intp.9.1.03bra.

- Braun, S. 2013. "Keep Your Distance? Remote Interpreting in Legal Proceedings: A Critical Assessment of A Growing Practice." *Interpreting* 15 (2): 200–228. doi:10.1075/intp.15.2.03bra.
- Braun, S. 2019. "Interpreting and Technology." In *Routledge Handbook of Translation and Technology*, edited by M. O'Hagan, 271–288. London: Routledge.
- Braun, S., E. Davitti, S. Dicerto, C. Slater, M. Tymczyńska, M. Kajzer-Wietrzny, G. Floros, et al. 2015. "EVIVA Evaluation Studies." EVIVIA Project, Deliverable 6.1. <http://virtual-interpreting.net/assets/Reports/D6.1-Evaluation-Studies.pdf>
- Braun, S., and C. Slater. 2014. "Populating a 3D Virtual Learning Environment for Interpreting Students with Bilingual Dialogues to Support Situated Learning in an Institutional Context." *Interpreter and Translator Trainer* 8 (2): 469–485. doi:10.1080/1750399X.2014.971484.
- Braun, S., C. Slater, and N. Botfield. 2015. "Evaluating the Pedagogical Affordances of a Bespoke 3D Virtual Learning Environment for Interpreters and Their Clients." In *Digital Education in Interpreter Education*, edited by J. Napier and S. Ehrlich, 39–67. Washington: Gallaudet University Press.
- Braun, S., C. Slater, R. Gittins, P. Ritsos, and J. Roberts. 2013. "Interpreting in Virtual Reality: Designing and Developing a 3D Virtual World to Prepare Interpreters and Their Clients for Professional Practice." In *New Prospects and Perspectives for Educating Language Mediators*, edited by D. Kiraly, S. Hansen-Schirra, and K. Maksymski, 93–120. Tübingen: Narr.
- Calongne, C. 2008. "Educational Frontiers: Learning in a Virtual World." *EDUCAUSE Review* 43 (5): 36–48.
- Class, B., and B. Moser-Mercer. 2013. "Training Conference Interpreter Trainers with Technology – A Virtual Reality." In *Quality in Interpreting: Widening the Scope*, edited by O. Garcia Becerra, E. Pradas Macias, and R. Barranco-Droege, 293–313. Vol. 1. Granada: Editorial Comares S.L.
- D'Hayer, D. 2012. "Public Service Interpreting and Translation: Moving Towards a (Virtual) Community of Practice." *Meta* 57 (1): 235–247. doi:10.7202/1012751ar.
- Davitti, E. 2013. "Dialogue Interpreting as Intercultural Mediation: Interpreters' Use of Upgrading Moves in Parent-Teacher Meetings." *Interpreting* 15 (2): 168–199. doi:10.1075/intp.15.2.02dav.
- Davitti, E. 2019. "Methodological Explorations of Interpreter-mediated Interaction: Novel Insights from Multimodal Analysis." *Qualitative Research* 19 (1): 7–29. doi:10.1177/1468794118761492.
- Davitti, E., and S. Pasquandrea. 2017. "Embodied Participation: What Multimodal Analysis Can Tell Us about Interpreter-mediated Encounters in Pedagogical Settings." *Journal of Pragmatics* 107: 105–128. doi:10.1016/j.pragma.2016.04.008.
- González-Davies, M., and V. Enríquez-Raído. 2016. "Situated Learning in Translator and Interpreter Training: Bridging Research and Good Practice." *The Interpreter and Translator Trainer* 10 (1): 1–11. doi:10.1080/1750399X.2016.1154339.
- Graves, A. 2012. "Interpreter Training in the European Parliament." *Gamma* 19: 143–149.
- Hansen, G., and M. Shlesinger. 2007. "The Silver Lining: Technology and Self-Study in the Interpreting Classroom." *Interpreting* 9 (1): 95–118. doi:10.1075/intp.9.1.06gor.
- Haro-Soler, M., and D. Kiraly. 2019. "Exploring Self-Efficacy Beliefs in Symbiotic Collaboration with Students: An Action Research Project." *The Interpreter and Translator Trainer* 13 (3): 255–270. doi:10.1080/1750399X.2019.1656405.

- Ibrahim-González, N. 2011. "E-learning in Interpreting Didactics: Students' Attitudes and Learning Patterns, and Instructor's Challenges." *JoSTrans* 16.
- Kim, S., J. Lee, and M. Thomas. 2012. "Between Purpose and Method: A Review of Educational Research on 3D Virtual Worlds." *Journal of Virtual Worlds Research* 5 (1): 1–18. doi:10.4101/jvwr.v5i1.2151.
- Kiraly, D. 2000. *A Social Constructivist Approach to Translator Education: Empowerment from Theory to Practice*. Manchester: St. Jerome.
- Ko, L. 2008. "Teaching Interpreting by Distance Mode: An Empirical Study." *Meta* 53 (4): 814–840. doi:10.7202/019649ar.
- Ko, L., and N. Chen. 2011. "Online-interpreting in Synchronous Cyber Classrooms." *Babel* 57 (2): 123–143. doi:10.1075/babel.57.2.01ko.
- Laugwitz, B., T. Held, and M. Schrepp. 2008. "Construction and Evaluation of a User Experience Questionnaire." *USAB 2008, LNCS 5298*, 63–76.
- Lave, J., and E. Wenger. 1991. *Situated Learning*. Cambridge, UK: Cambridge University Press.
- Lombard, M., and T. Ditton. 1997. "At the Heart of It All: The Concept of Presence." *Journal of Computer Mediated Communication* 3 (2): 1–39.
- Mason, I. 2006. "On Mutual Accessibility of Contextual Assumptions in Dialogue Interpreting." *Journal of Pragmatics* 38 (3): 359–373. doi:10.1016/j.pragma.2005.06.022.
- Mulayim, S., and M. Lai. 2015. "The Community-of-inquiry Framework in Online Interpreter Training." In *Interpreter Education in the Digital Age: Innovation, Access, and Change*, edited by S. Ehrlich and J. Napier, 95–124. Washington, DC: Gallaudet University Press.
- Ritsos, P., R. Gittins, S. Braun, C. Slater, and J. Roberts. 2013. "Training Interpreters Using Virtual Worlds." In *Transactions on Computational Science XVIII, LNCS*, 21–40. Vol. 7848. Heidelberg: Springer.
- Rosenberg, B. 2007. "A Data Driven Analysis of Telephone Interpreting." In *The Critical Link 4. Professionalisation of Interpreting in the Community*, edited by C. Wadensjö, B. Englund Dimitrova, and A. Nilsson, 65–76. Amsterdam: Benjamins.
- Sahin, M. 2013. "Virtual Worlds in Interpreter Training." *The Interpreter and Translator Trainer* 7 (1): 91–106. doi:10.1080/13556509.2013.10798845.
- Sandrelli, A. 2010. "Corpus-Based Interpreting Studies and Interpreter Training: A Modest Proposal." In *Translation–Sprachvariation–Mehrsprachigkeit. Festschrift in Honour of Prof. Lew Zybatow*, edited by I. Ohnheiser, W. Pöckle, and P. Sandrini, 69/90. Frankfurt: Lang.
- Sandrelli, A. 2015. "Becoming an Interpreter: The Role of Computer Technology." *MonTI* 2: 111–138.
- Skaaden, H. 2009. "Teaching Interpreting in Cyberspace. The Answer to All Our Prayers?" In *Interpreting and Translating in Public Service Settings*, edited by R. de Pedro Ricoy, I. Perez, and W. Wilson, 74–88. Manchester: St Jerome.
- Skaaden, H. 2017. "'That We All Behave like Professionals'. An Experiential–Dialogic Approach to Interpreter Education and Online Learning." In *Teaching Dialogue Interpreting: Research-Based Proposals for Higher Education*, edited by L. Cirillo and N. Niemants, 324–340. Amsterdam: Benjamins.

- Tymczyńska, M. 2009. "Integrating In-Class and Online Learning Activities in a Healthcare Interpreting Course Using Moodle." *The Journal of Specialised Translation* 12: 149–165.
- Viljanmaa, A. 2018. "Students' Views on the Use of Film-Based LangPerform Computer Simulations for Dialogue Interpreting." *Translation and Interpreting Studies* 13:3: 465–485. doi:10.1075/tis.00025.vil.
- Vygotsky, L. 1978. *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.
- Wadensjö, C. 1998. *Interpreting as Interaction*. Essex: Addison Wesley Longman.
- Wadensjö, C. 2014. "Perspectives on Role Play: Analysis, Training and Assessments." *The Interpreter and Translator Trainer* 8 (3): 437–451. doi:10.1080/1750399X.2014.971486.
- Wenger, E., R. McDermott, and W. Snyder. 2002. *Cultivating Communities of Practice*. Boston: Harvard Business School Publishing.