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Methodological Considerations for the Study of Interdisciplinary Transnational Virtual Exchange Interactions

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Introduction

A virtual exchange (VE) is an umbrella term that refers to ways in which geographically distanced groups of learners interact with each other using one or multiple languages with the aim of either co-constructing cultural discourse and/or collaborating on a pre-set task (O’Dowd, 2020). International projects financed by Erasmus+ such as EVALUATE¹ (Evaluating and Upscaling Telecollaborative Teacher Education) or EVOLVE² (Evidence-Validated Online Learning through Virtual Exchange) have garnered much interest in research communities. While EVALUATE sought “to examine the impact of the class to class model of virtual exchange with over 1000 students of Initial Teacher Education” (O’Dowd, 2021, p. 2), EVOLVE generated training and research resources for the implementation of other types of VEs. Other projects place “English as a Medium of Instruction (EMI) for education firmly on institutional agendas” (Reynolds, 2022) as means to internationalise the curriculum.

Virtual exchanges take many forms. O’Dowd (2021, p. 4) identifies four models of VEs in language education. ‘E-tandem’ and ‘telecollaborative’ models take a bilingual-bicultural approach, wherein tasks typically include conversation, error correction, and/or a discussion around cultural themes. Both models aid in fostering what one might call ‘general’ language skills, with intercultural objectives brought to the fore in varying degrees of prominence. Well-established telecollaborative models such as bicultural and bilingual Cultura have formed the basis of many exchanges and have been adapted to different languages and contexts (see Helm, 2015). On the other hand, the ‘critical approaches to telecollaboration’ and ‘transnational virtual exchange’ models adopt a more lingua franca approach. The former model includes

¹ <https://www.unicollaboration.org/index.php/evaluate/>

² <https://research.rug.nl/en/projects/evidence-validated-online-learning-through-virtual-exchange>

mediator-led discussions on social and political issues, whereas the fairly new transnational VE model argues for an integration of the principles of global citizenship education within the framework of earlier versions of VEs. It focuses on global themes³ providing learners with hands-on experience at completing collaborative tasks, instead of simply encouraging them to make explicit cultural comparisons.

However, few studies on VEs focus on English for Specific Purposes (ESP) contexts and while case studies⁴ on ESP contexts have indeed been published (cf. see Helm and Beaven, 2020), most of them deal with the *designing* of VEs. Moreover, virtual three-dimensional environments (or metaverse) that have the potential to immerse and engage the learner in interactions and task completion (see Ciekanski et al, 2020) have not yet been explored for the purposes of VEs for ESP contexts. Thus, while theoretical approaches that lean towards an incorporation of the principles of global citizenship education are currently being explored (such as O'Dowd, 2020), researchers have yet to look at the methodological issues that might be considered with in a 3D context of a transnational virtual exchange. This paper will thus provide methodological considerations for (1) the designing of a learning scenario that incorporates 3D technology, using a Design-Based Research (DBR) paradigm and (2) the study of immersive and non-immersive interactions that are generated through such an interdisciplinary transnational VE.

1. Context and pedagogical scenario: Project *i-Laser* 2021 and 2022

1.1. Scenario

A ten-week interdisciplinary VE project called i-LASER (Intercultural Legal Advising for Social Entrepreneurs) was arranged over the course of the first semester of the academic year with two different cohorts of students in 2021-22 and in 2022-23 (cf. Table 1). In 2021-22, it took place between French and Spanish students, while in 2022-23, it took place between students of France and Sri Lanka. While the French specialised in Legal English, their counterparts in Spain and Sri Lanka were Business English students. Eight groups of international partners were finally formed in both the scenarios.

³ Look at Deacon & Miles (2022) for a case study on global mindedness or Sims (2022) for a case study on critical thinking and cultural intelligence.

⁴ Cf. Case studies on Language for specific purposes contexts with tourism (Háhn & Radke, 2020), performing arts (Gorman, Kanninen, & Syrjä, 2020), and business (Koris & Vuylsteke, 2020).

		Partners	ESP specialisation	Number of students
i-Laser 1	2021-22	France	Law	22
		Spain	Business	19
i-Laser 2	2022-23	France	Law	22
		Sri-Lanka	Business	24

Table 1. Demographics of the two groups of participating VEs

Based on the transnational VE model, students were expected to use English as Lingua franca as they interacted in their small groups. Business partners (Spain, Sri Lanka) had the local task of setting up a company based on sustainable development goals. Legal partners (France), on the other hand, were expected to consult their business counterparts on judicial matters of commercial and business law. With their international partners, students were required to pool in their professional language expertise to collaboratively create a promotional video (digital story) for the company.

1.2. Virtual spaces for interaction

Collaborating virtually with international partners calls for appropriate tools that can facilitate communication and interaction. While students could exchange their telephone numbers, that alone would not suffice. With a view to obtaining data for research, students were requested to record at least three of their meetings. Video conferencing tools such as Microsoft Teams and Zoom were highly recommended for the same. However, the real difference between the first and the second scenario was that in the second one (2022-23), only video-conferencing tools were made use of (cf. Table 2). In the first one (2021-22), a 3D metaverse called Spatial⁵ was introduced to the scenario and every international group was encouraged to meet at least once using Oculus VR headsets.

		Partners	Virtual spaces used
i-Laser 1	2021-22	France	Zoom, Teams, Spatial (3D VR)
		Spain	
i-Laser 2	2022-23	France	Zoom, Teams
		Sri-Lanka	

Table 2. Virtual spaces used for interaction

The application Spatial is marketed as a virtual environment for events, cultural exhibitions and haptic experiences and can be used in both 2D (on a computer) and 3D (with

⁵ <https://www.spatial.io>

VR headsets). The user can create or upload content in one click and invite up to 50 people to participate in a meeting. Other free features include the creation of a lifelike avatar from selfies, screen-sharing and creating sticky notes to leave textual messages to other participants.

1.3. Immersive v. non-immersive virtual environments

In a study on the use of virtual environments for individuals with autism spectrum disorder (Miller & Bugnariu, 2016), it was found possible to categorise spaces into three levels of immersion depending on physical and digital settings. Settings depicted by the presence of multiple devices or objects in the physical world, that accommodate only one sensory modality (e.g., auditory, visual, motor etc) and wherein screen display “may replicate features of the simulated environment, but not in a detailed or specific manner” (p. 2) are characteristic features of what the authors term “low” immersion. “Moderate immersion” accommodates one or two sensory modalities and while screen display might replicate a few features of the simulated environment, few finer details are provided. Finally, “high immersion” refers to a limited presence of devices in the physical world and full-body motion capture is accompanied with very high fidelity to the simulated environment.

Thus, while video-conferencing tools offer interactive language learning possibilities for geographically distanced learners, they offer low immersive environments. A high immersive VR metaverse though accessible, can sometimes prove to be tricky and the setting-up of a VR lab is costly. However, designing a teaching/learning scenario that takes into account the various affordances⁶ of a VR metaverse is the key to using 3D technology efficiently (Ciekanski et al, 2020).

2. Data collection and analysis

Data collection depends on the type of the research question(s) created. One of the research questions set at the outset of the VE was with respect to the (perceived) added value of the integration of a high immersive 3D environment (as opposed to a low immersive 2D video-conferencing environment) in an interdisciplinary VE. Moreover, being a pilot case-study, data was collected in an ecological approach within the framework of a participatory research (Nissen, 2014, p. 14).

Collecting interactional data on video-conferencing tools is fairly simple. Both *Teams* and *Zoom* allow the user to record conversation in a video format at the outset of the interaction

⁶ Affordances are defined as “the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used” (Norman, 1988, p. 9).

and the video downloaded can then be transcribed and analysed according to research needs. Thus said, any interactions that may have taken place through the “chat” option are largely left ignored. Moreover, while the verbal conversation may get recorded, other interactive activity (e.g., opening or closing of webpages or the possible use of an online dictionary) is often overlooked. The researcher thus focuses solely on the verbal, non-verbal and sometimes, paraverbal components of the conversation, ignoring the paraphernalia of other types of data that have not been included. Recording on-screen activity on a metaverse with VR headsets, on the other hand, may not be as simple but provides the researcher with rich multimodal data. She is thus more qualified to inspect the various 3D elements at her disposal to better understand how meaning is made. This said, technical recording errors are also more likely to take place if audio/video settings of on-screen recorders (such as OBS studio or Camtasia) have been disregarded. Whether ubiquitous access to a learner’s on-screen activity while engaged in a task is necessary and questions of individual privacy during the said interaction beg attention.

This research was framed within Design-Based Research (DBR) paradigm (Scott et al, 2020) which is characterised by continuous cycles of design, enactment, analysis, and redesign for the development of practical design principles, patterns, or grounded theorizing. It yielded two categories of data, namely “invoked” data and “triggered” data (Van der Maren, 2003). Invoked data refers to data that exists independently of the research protocol, while triggered data occurs in naturally seeming interactive situations, such as conversations or dialogues.

The study i-Laser 1 (2021-22) yielded 11 usable interactions: 7 in 2D and 4 in 3D, while the second study (2022-23) provided 24 interactions in 2D. Since there were 8 groups of students formed in both the studies, 24 group reports were obtained from the students. The number of focus groups, on the other hand, doubled (cf. Table 3). Focus groups were moderated by research assistants who took part in the project.

	<i>Invoked data</i>			<i>Triggered data</i>
	2D Interactions	3D Interactions	Group reports	Focus groups
i-Laser 1 (2021-22)	7	4	24	4
i-Laser 2 (2022-23)	24	0	24	8

Table 3. Data collected

⁷ The author uses the French terms “*données invoquées*” and “*données suscitées*”, which have been translated by the author of this paper as invoked data and triggered data respectively.

Analysing multimodal data requires serious consideration: What elements within the data are going to be studied? How will they be transcribed? What methods of analysis will be used? Will they be triangulated with other types of data?

Interactions generated through telecollaborative virtual exchanges are generally studied through a semiotic multimodal perspective to examine how meaning is made over the course of the interaction (Guichon & Wigham, 2016). For instance, Holt (2021) extracted a 15.5-hour corpus of videoconferencing between French language tutors and Irish learners to identify nearly 300 lexical explanation sequences that focused on form, meaning and use. Other studies (cf. Cappellini & Combe, 2017; Satar & Wigham, 2020) have focused on human gestures to understand how meaning is made during an online interaction.

The interactional data collected during the course of this study comprised of both 2D and 3D interactions. Since the objective at the outset of the study was to examine the added value of 3D interactions, it was deemed imperative to compare the interactional output, in other words, the synchronous exchanges that took place within international partner groups. Data from such exchanges were collected and transcribed using a multi-layered method called Multi-Modal MUVE Method (Palomeque & Pujolà, 2018). Operating at both macro and micro levels, this method allows for sequential data organisation and a study of mode interrelation. The unit of analysis for this study was the discursive sequence, made up of turns that intervene in a communication strategy (Palomeque, 2016). Finally other data that constituted of group reports and focus groups were used to add significance to the recorded data.

3. Conclusion and Perspectives

This paper sought to provide methodological considerations at two levels.

- 1) Designing a learning scenario within a DBR paradigm is particularly useful for teacher-researchers as the iterative processes of reflecting-designing-testing-evaluating-reflecting allow them to identify problem areas that need to be addressed and potential solutions to the problems.
- 2) Observations made during the study of immersive and non-immersive interactions that are generated through an interdisciplinary transnational VE could either be comprehensive or meticulous, depending on research objectives and the willingness of the researcher. Analysing data at a macro level allows the researcher (a) to situate the interactions within the timeframe of a task-based project and (b) study the thematic nature of interactions, so as to (c) better appreciate the non-task-based interactions that transpired over the course of the exchanges. On the other hand, choosing a discursive

sequence as the principal unit of analysis (or micro level) offers (d) interactional strategies used by learners in videoconferencing and metaverse contexts.

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