Designing a Virtual Exchange Intervention for the Development of Global Competence: An Exploratory Study

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Abstract. This study demonstrates the process of designing a virtual exchange intervention aiming at developing English for Specific Purposes (ESP) learners' global competence. The study adopted a three-phase Design-Based Research (DBR) approach which included the exploration phase, the implementation phase, and the reflection phase. In this paper, the exploration phase of the study is presented, which was conducted in order to gain insight on various aspects pertaining to virtual exchange embedded in ESP learning. The study was formulative in nature as it aimed to examine the feasibility of the intervention and determine the best intervention design. It also aimed at examining students' attitudes towards telecollaborative learning, their perceptions regarding the anticipated benefits and challenges of virtual exchange, as well as their suggestions concerning the implementation of the intervention. The study combined a mixed methods approach with secondary data collection through a review of similar studies, quantitative data collection by means of an opinion questionnaire, and qualitative data collection through focus groups with university students. The findings of the research provided a thorough understanding of the design of virtual exchange and formed the basis of a more conclusive subsequent study.

Keywords: Virtual exchange · Global competence · DBR · Exploratory study

1 Introduction

In response to the changing landscape and the complexity of our world today, there is an increasing need for educational reforms at all levels. In this context, various educational institutions and professional associations are beginning to acknowledge the need to add a global dimension to their education [1] and to enhance interculturality in young people [2]. Foreign language educators are constantly responding to the changing trajectories, by embracing new pedagogies and by taking advantage of the vast technological developments and seamless digital connectivity. The abundance of new technologies which characterizes our world today has created new teaching and learning opportunities that can be employed to support underpinning pedagogies and accomplish diverse learning goals, including the development of intercultural awareness and global competence. Among the recent technologically-mediated pedagogical approaches that have been practised aiming at building students' intercultural

communicative competence is virtual exchange. Also known as telecollaboration, virtual exchange is a well-known pedagogical approach which involves engaging classes in online intercultural interaction and collaboration projects with geographically dispersed partners [3].

Virtual exchange has generally been positively received by teachers and students [4] and many studies have reported on various benefits of this pedagogical approach. These include the development of students' target language [5] the enhancement of intercultural awareness [6, 7] as well as the development of intercultural communicative competence as defined in Byram's model [8] in 1997 [9–11]. Virtual exchanges have also been reported to successfully accomplish other pedagogical goals, such as increasing student motivation [12] and learner autonomy [13] developing students' computer literacy [14] and enhancing multiliteracy skills [15]. However, in a world that is characterized by increased global communication, mobility, and digital connectivity, there is a need to reconsider the role of virtual exchange in education and explore its potential to develop informed, responsible and engaged citizens. McCloskey [16] argues that "foreign language ability, global awareness, and intercultural communication skills are increasingly recognised as essential dimensions of productive participation in the emerging economic, civic, political and social arenas of the 21st century". With this in mind, virtual exchange can provide a fertile ground for crossing global boundaries and meeting the demands of 21st century learners as empowered citizens of a democratic society who can advocate innovative solutions in response to many global and local problems, through their transnational partnerships.

The present study was an attempt to build the learners' global profile through virtual exchange projects that adopt a critical design. The goal was to create a telecollaborative habitat, rich in affordances for the development of global competences and active citizenship with a view to promoting a democratic culture in internationalised university language education. Considering that learning is most effective if it is relevant to students' needs, this study was situated at the nexus of global competence and content-based learning. The study adopted a three-phase Design-Based Research (DBR) approach which included the exploration phase, the implementation phase, and the reflection phase. DBR has been defined by Wang and Hannafin [17] as "a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, leading to contextually sensitive design principles and theories". In this paper, the exploration phase of the study is presented, which was conducted in order to gain insight on various aspects pertaining to virtual exchange embedded in ESP learning. The findings of the research provided a thorough understanding of the design of virtual exchange and formed the basis of a more conclusive subsequent study.

2   Methodology

Exploratory research is conducted when problems are in a preliminary state, to generate formal hypotheses. Exploratory studies often rely on secondary research, such as reviewing available literature or adopting qualitative approaches such as focus groups

in order to form the basis of the final study. As Singh [18] explains, exploratory research "can even help in determining research design, sampling, methodology and data collection method". The present study was formulative in nature as it aimed to examine the feasibility of the intervention and determine the best intervention design. It also aimed at examining students' attitudes towards telecollaborative learning, their perceptions regarding the anticipated benefits and challenges of virtual exchange, as well as their suggestions concerning the implementation of the intervention.

The exploration phase comprised of an investigatory study which included a secondary research with extensive review of similar studies taken in order to learn from their results, and a primary research which involved quantitative data collection by means of an opinion questionnaire, and qualitative data collection through focus groups with a purposive sample in order to lay the groundwork that subsequently led to the actual study. The exploration phase also served as a useful terrain to test data collection instruments and consider situational factors that could facilitate or hamper the planned interventions. Administering the pre-intervention questionnaire and rehearsing the focus groups helped gather preliminary information and establish an understanding of the context and target respondents' attitudes and opinions with regard to the study's scope. The approach followed in the exploration phase is in line with design-based research methodology which begins with a detailed analysis of the problem, context, participants and existing solutions. DBR often includes a pilot study so as to establish an understanding of contextual aspects and requirements. Subsequently, designers analyze the findings using multiple methodologies and based on systematic analysis, reflection, and theoretical guidance, they generate design localized principles [19]. Apart from the secondary research and primary research, exploration also included the quest for a virtual exchange partner to collaborate as a practitioner and a researcher in the planned interventions.

2.1   Secondary Research

Secondary research involved reviewing previous virtual exchange initiatives which aimed at expanding telecollaboration beyond the intercultural competence scope, adding a global outlook to this pedagogical approach. Furthermore, previous studies that adopted a lingua franca configuration or focused on content-based learning were explored. In addition, the review of previous studies aimed at investigating theoretical paradigms and design principles with an emphasis on the constituent parts of the virtual exchange ecosystem and how these, and interaction amongst them, can support or hamper opportunities for competence learning. Specifically, in the exploration phase, the elements of technological and linguistic mediation, task design and themes were examined.

2.2   Primary Research

The exploration phase included the collection of quantitative and qualitative data in order to develop a well-grounded picture of various aspects pertaining to telecollaboration embedded in content-based learning. Issues explored include expected affordances, limitations, feasibility and implementation, as well as anticipated challenges.

Quantitative data were gathered by means of questionnaires which were administered to a purposive sample of students that fit the characteristics of the sample of the planned subsequent interventions. In the exploration phase, the pre-intervention questionnaire was used for piloting purposes, as well as for gaining insights with regard to the target audience's intercultural experiences, motivation for language learning, and perceived affordances of virtual exchange embedded in language learning at university level.

Qualitative data collection was conducted by means of focus groups with a purposive sample of university learners. Focus groups are a form of group interview that capitalizes on communication and interaction between research participants in order to produce data. This method is considered useful for generating data by exploring people's knowledge and experience and can be utilized for examining what people think, how they think and why they think that way [20]. In the exploration phase, the focus groups revolved around the use of technology in language learning, opportunities of learning languages in culturally diverse settings, student collaboration, the monocultural character of the university, perceived benefits and pitfalls of telecollaboration, perceived gains, anticipated challenges, feasibility and implementation of virtual exchanges, possible modes and configurations, duration of exchange, possible partner countries, groupings, learner matching, tasks, and expected outcomes.

3 Findings

This part presents the findings of the exploratory phase of the DBR research. These findings led to the evolution of the preliminary principles which guided the design of the intervention that was implemented in the next phase of the research.

3.1 Review of Previous Studies

The exploration research was initiated with an extensive review of similar studies undertaken in the context of virtual exchange. Virtual exchange is not a completely new pedagogical approach [21] and numerous telecollaboration projects have been established to date in various educational contexts, involving different types of partners, web tools, and pedagogical practices [22]. Many virtual exchanges currently reported in the literature describe tandem projects whereby the learners communicate with their partners who are based in a different country in order to practice their language [13]. Under this model, learners adopt the roles of peer tutors who provide corrective feedback on their partners' language use. A different model of virtual exchange is the telecollaboration model whereby the focus extends from communicative competence to intercultural competence [23]. Intercultural telecollaborative projects are very often bicultural involving communication in the two partners' target languages. Lingua franca initiatives are sporadic in the virtual exchange arena despite the acknowledged benefits of using a shared language in intercultural partnerships. Kohn [24] sketches the lingua franca pedagogy adopted in the *Telecollaboration for Intercultural Language Acquisition* project (TILA) whereby "focus is on intercultural communicative exchanges between peers who are in the same language boat". According to Hoffstaedter and Kohn [25] who report on the TILA project, the lingua

franca constellation can be highly motivating as it offers authentic communication on an equal footing. Learners seem to feel more confident and less worried to make mistakes as the focus is on getting the message across rather than on producing accurate utterances. Grazzi and Maranzana [26] similarly report on an intercultural telecollaboration project that was configured based on the ELF approach arguing that "this project has shown that the use of English as a lingua franca (ELF) by non-native speakers (NNS) of English within a networked-based context is not a hindrance to communication and mutual understanding. On the contrary, it proves to be an appropriate affordance that L2-users develop through social cooperative practices in order to carry out pragmatic communicative goals". With this in mind, a lingua franca approach was considered as an appropriate configuration in an emerging model of virtual exchange which aspires to add a global perspective to telecollaborative learning. As Graddol cited in O'Dowd [3] argues, today's graduates are more likely to use English as a lingua franca with non-native speakers in their prospective professional careers. Therefore, using a shared language in virtual interactions and in collaborative productions of common artefacts seems to be a suitable approach for affording opportunities to university learners for more realistic intercultural encounters.

Despite the recognized benefits of the aforementioned lingua franca initiatives, what seems to be missing from various virtual exchange projects is criticality, a notion that has been emphasized in Byram's [8] concept of Critical Cultural Awareness (CCA), as part of his broader model of Intercultural Communicative Competence. CCA implies a personal and social transformation through intercultural dialogue. This transformation emanates from critical exploration, analysis and evaluation of self and other [27]. Criticality is at the heart of intercultural citizenship education. However, very few virtual exchange projects have embraced the notion of criticality in their objectives. One remarkable example is *Soliya's Connect Program*, a dialogic model for telecollaboration [28] designed to address the tensions between Western and Arab and Muslim societies [21]. What differentiates the Soliya Connect Program from more traditional models of telecollaboration is the fact that participants are gradually taken out of their comfort zones and are encouraged to synchronously engage in discourse on conflicting topics In fact, divisive topics are deliberately addressed and conflict is not considered to be a barrier to dialogue; instead, potential conflicting views are seen as an opportunity for transformation [28]. This echoes Barnett's [29] 'transformatory critique' or a' refashioning of traditions'. The Soliya Connect Program offers a valid pedagogical approach by engaging participants in intercultural dialogue which is not limited to safe topics. Instead, it dares to encourage participants to delve into conversations that may spark conflict. This affords a significant opportunity for participants to "engage with multiple subjectivities and perspectives in a safe environment where they are free to dig deeper to acquire intercultural understanding" [28].

In addition, very few virtual exchange initiatives have been framed in the concepts of global interconnectivity [30] and critical social engagement. Global competence and active citizenship have been explicitly reported as project goals in limited virtual exchange projects to date. One such project is the Malvinas/Falklands online intercultural citizenship action research project implemented in an EFL classroom in Argentina [31]. Through comparative tasks and collaborative artefact creation that revolved around the Malvinas/Falklands war fought between Argentina and the UK in

1982, learners developed a critical perspective on different texts, reaching the highest level of criticality as defined by Barnett [29] which is the transformatory critique in action especially because the participants' activities were not confined within the partnership; instead they were expanded to the participants' local communities through the creation and sharing of artefacts in the learners' local contexts [31]. Such projects place human rights education at the heart of the exchange and empower learners to act as responsible citizens towards addressing global or local conflict and justice. These initiatives take intercultural discourse beyond the 4Fs - Food, Festival, Folklore, and Fashion [32] which many times results in a reduced perspective of cultural difference. Projects like the Soliya Connect Program and the Malvinas/Falklands online inter-cultural citizenship initiative are designed with a social perspective, capitalizing on international groups' dynamics towards addressing the critical current issues our world is faced with today. These initiatives require the development and deployment of various global competences, such as valuing cultural diversity, respect, responsibility, empathy, and knowledge of self, among others, which will enable the partners to achieve their common social goals.

Virtual exchange projects embedded in a content-based language context are also scarce in the literature. Most telecollaborative projects are implemented in general language courses or teacher education programs. For the purposes of this study, a review of studies reporting on projects undertaken in the context of English for Specific Purposes (ESP) or Language for Specific Purposes (LSP) modules was conducted. Among the studies that have been reviewed is one that concerns a project implemented in an intercultural tandem between language teachers as part of their teacher training or practicum [33]. A different project by Rolinska, Guariento and Al-Masri [34] reports on a telecollaboration between the University of Glasgow and the Islamic University of Gaza. In this dual project, postgraduate students of Science Engineering and Tech-nology in Glasgow (SET) were mentored by SET graduates with strong language skills in Gaza (EAST 1), while at the same time, postgraduate Biomedical students in Glasgow were partnered with Biomed graduates in Gaza (EAST 2). These two projects relied on a lingua franca, subject-specific, peer review telecollaboration model aiming at responding to the students' need to perform effectively in global communication and increase their employability prospects. The EAST projects demonstrated how technology-enabled interventions to subject-specific language courses may positively affect the learning experience enabling participants to start working towards global competence [34].

A different content-based virtual exchange project is a multiliteracies model for telecollaboration which was designed to address the specific needs of students of Business and Economics [35]. The project was grounded in the theories of Foreign Language Learning (FLE) and Global Virtual Teams (GVT) and was carried out between students at the University of Paderborn in Germany and Masaryk University in Brno in the Czech Republic. The exchange was embedded in ESP courses for Business and Economics at each university in a blended learning framework which included elements from both telecollaboration and GVT models, providing students with valuable situated practice for workplace settings that they are likely to come across in their future careers. A final example of content-based telecollaboration is the X-Culture Project [36]. The X-Culture project was an attempt to enhance learning in

International Business courses by affording business students the opportunity to experience the challenges and learn best practices of international collaboration by working with their international counterparts. Communication and coordination among the X-Culture participants has been conducted using free online collaboration tools, such as email, Skype, Google+ , Facebook, Dropbox, and Doodle. These tools were selected as they are the ones that are commonly used by employees of multi-national companies. The particular project has involved over 4,000 students to date and the results reported so far indicate enhanced learning between pre- and post-project cultural intelligence.

3.2   Technological Mediation

The secondary research included an exploration of the available technologies that can be used to mediate virtual exchange aiming to develop learners' global competence while enhancing their understanding of discipline-specific content. Considering the vast affordances and potential that new technologies offer in learning today, various Web 2.0 applications were examined for the purposes of this study in order to select the most appropriate ones that would serve as the mediating online environment where inter-action and communication among students would occur. Tools were examined and analyzed in terms of modes and potential for synchronous, asynchronous communi-cation, support of autonomy, interactivity, and multimodality. Technologies explo-ration was performed having in mind the mediating effect of online tools [15] and their potential to foster sustained communication and interaction between students [37].

For the purposes of this study, Google+ was investigated for its pedagogical value, and its potential to serve as a mediating online milieu for virtual exchange. Google+ is a relatively new social networking service that was launched by Google Inc. in 2011. Despite the fact that Google+ was discontinued in 2019 for business use and con-sumers, during its short life cycle it provided an alternative to other popular social networking sites, such as Facebook. Google+ is similar to Facebook but with some additional features that can afford a rich and diverse intercultural experience for users. Google+ is free and can be joined with a Google Account. Features include the ability to post photos and status updates to the stream or interest-based communities, group different types of relationships into Circles. It also features multi-person instant mes-saging, text and video chat called Hangouts, events, location tagging, and the ability to edit and upload photos to private cloud-based albums [38]. Google+ Communities allow users to create ongoing conversations about particular topics and can function as a locus for discussion and exchange of views rather than as a way to teach the lan-guage. Posts on the Communities can be responded to or commented on.

Google+ user's profile includes basic social networking services like a profile photo, an About section, background photo, cover photo, previous work and school history, interests, places lived, an updates space, contact information, places visited, and other profiles the user has or pages the user contributes to. Google+ Hangouts are free video conferencing calls with up to 10 people, done through the Google+ website or mobile app. Many apps can be used inside the hangout, allowing users to share

documents, a scratchpad, or their screens with other users, as well as many built-in apps such as YouTube, Google Docs, and the new Capture [39]. Google+ has a +1 Button which allows people to recommend sites and parts of sites, similar in use to Facebook's Like button. Finally, Google Drive is a file storage and synchronization service created by Google. It allows users to store files in the cloud, share files, and edit documents, spreadsheets, and presentations with collaborators. Google Drive encompasses Google Docs, Sheets, and Slides, an office suite that permits collaborative editing of documents, spreadsheets, presentations, drawings, forms, and more [40].

3.3 Findings from Questionnaires

A questionnaire was administered to 53 ESP students enrolled at the Cyprus University of Technology (CUT). A total of 53 completed questionnaires were returned. All participants were of Cypriot origin and thirty-three students were male while 20 were female. All participants were first-year students at the CUT, with 28 majoring in Agriculture, Biotechnology and Food Science and 24 majoring in Mechanical Engineering and Materials Science. Participation was voluntary and anonymity was ensured.

One of the aims of the pre-intervention questionnaire was to collect data pertaining to the learners' perceptions about technological mediation in language learning at tertiary level. Since virtual exchanges are inherently technologically supported, there was a need to map the learners' online profile with emphasis on their experience with various Web 2.0 tools and the extent to which they felt comfortable with the integration of technology in language learning. The participants in the exploration phase, as well as in the subsequent interventions in the implementation phase, comprise the 'digital natives' population [41]; therefore, they are expected to be technologically-savvy. However, the varied technological implications of the planned virtual exchange mandated a deeper exploration of the learners' technological profile in order to facilitate the selection of appropriate tools for the exchange as well as to determine the level of training that might be needed to enable students to carry out the project tasks. A multiple-response analysis was computed to identify the social networks learners were mostly engaged in. The analysis indicated that the most widely used social media sites were Facebook, followed by Skype, YouTube, Oovoo, and Google+ . This analysis was taken into consideration during the selection of available social networks to facilitate synchronous and asynchronous interaction between the virtual exchange partners.

A different type of analysis measured the participants' attitudes towards the integration of technology in their language learning modules at university. On a Likert scale 1–4 whereby 1 meant 'Not at all' and 4 meant 'Very much', students indicated that their previous experience with technology-enhanced language learning was adequate (3.43), and that their attitudes towards the use of technology in language learning were considerably above average. The exploration phase aimed at gaining insight in the participants' views about virtual exchange as a pedagogical practice embedded in university language learning. This information was deemed important as it would give

an indication of the students' attitudes towards telecollaboration with emphasis on the expected gains of this approach and was expected to facilitate the smooth integration of virtual exchange in the module under scrutiny. The analysis indicated that the most anticipated benefit of telecollaboration would be the development of students' linguistic skills, followed by the opportunity to get closer to other cultures. A similar analysis was performed to explore the participants' expected challenges of telecollaboration. This information was considered to be important for the design of the project as it provided insights into the learners' concerns, inhibitions, or insecurities. The analysis indicated that the participants' most anticipated challenge pertained to individual insecurities or lack of confidence in interacting with people who are not members of their immediate environment. Other anticipated challenges included concerns about an increase in their workload and lack of openness to interact with people of diverse cultural backgrounds.

With regard to cultural awareness, students were asked to respond to 20 Likert-type questions from 1–4 whereby 1 meant 'Strongly Disagree' and 4 meant 'Strongly Agree'. The questions were devised by the researchers of the study, drawing from literature on intercultural competence and global citizenship. This set of questions aimed at exploring students' level of cultural awareness and was relevant to their views and perceptions of other cultures, their curiosity and willingness to interact with people from different cultural backgrounds, as well as their reactions and attitudes in cases of discrimination based on cultural differences. Some of these questions were the following: *I think that all cultures have something to offer the world; When I notice cultural differences, my culture seems to have the best approach; I think that my culture is the only right one; I speak up if I witness another person being humiliated or discriminated against; Most of my friends are from my own ethnic background; I'm interested in the ideas and beliefs of people from different ethnicities; It's really hard for me to feel close to a person of another ethnicity.* A Cronbach's Alpha reliability test was carried out in SPSS in order to measure the internal consistency ("reliability") of the set of 20 questions. The analysis indicated a high level of internal consistency for the scale with the specific sample (0.796). Table 1 demonstrates the Cronbach's Alpha analysis computed in the exploration phase:

Table 1. Cultural Awareness Cronbach's Alpha analysis

Reliability statistics		
Cronbach's Alpha	Cronbach's Alpha based on standardized items	N of Items
0.796	0.799	20

After conducting the reliability test, the participants' level of cultural awareness based on the 20 items was measured. The analysis indicated a medium level of cultural awareness with a mean score at 2.94. This information was considered important in the design of the intervention as it depicted the participants' intercultural profile. Table 2 demonstrates the learners' level of cultural awareness based on the set of 20 items:

Table 2. Participants' level of Cultural Awareness

Cultural awareness		
N	M	SD
53	2.94	0.321

Overall, the quantitative data analysis yielded useful information regarding the targeted learners' attitudes towards technology-enhanced language learning and pointed to a number of technological tools that could be utilized in the planned exchanges. In addition, the attitudes of the learners towards telecollaboration were explored, placing emphasis on the anticipated benefits and challenges. The students' indication of inhibition towards interacting with people of diverse cultural backgrounds, coupled with their medium level of cultural awareness based on the analysis of their responses in the respective 20 items, was taken into consideration in the design of the interventions. Finally, the piloting of the questionnaire led to minor modifications in the wording of a few questions and typographical corrections.

3.4   Findings from Focus Groups

The findings from quantitative data analysis were corroborated in the qualitative analysis which was performed by means of focus groups with a small sample of learners fitting the description of the target group in the planned interventions. The sample comprised of 12 ESP learners at the Cyprus University of Technology. Two rounds of focus group took place which lasted approximately 45 min each. Six Agriculture, Biotechnology and Food Science ESP students participated in the first round (4 female and 2 male students), and 6 Mechanical Engineering and Materials Science ESP students participated in the second round (1 female and 5 male students). The focus groups aimed to build a synergistic partnership comprised of the teachers and learners in order to negotiate the planned study in terms of design and implementation. The focus groups aspired to bring the learners' previous experiences into the research process and utilize them to inform the study. This phase was also an effort to rehearse guided questions with subjects similar to the target group. Questions asked were open-ended, specifically related to the main issues of the survey. Topics discussed included the use of technology in language learning, opportunities of learning languages in culturally diverse settings, student collaboration, the monocultural character of the Cypriot university, as well as anticipated benefits and challenges of telecollaboration. In addition, the focus groups aimed at collecting data regarding the feasibility and implementation of the virtual exchange, with emphasis on configurations and situational factors, such as possible modes, duration, partner grouping, and preferred activities. Data from focus groups were analyzed qualitatively in NVivo. The findings from both rounds of focus groups provided great insights on where students stand on the issue of technology and intercultural learning and formed the basis of the subsequent study. Emergent themes included the extensive use of technology both for educational and recreational purposes and the view that technology-enhanced language learning can be beneficial. At the same time, the participants' limited opportunities for

cross-cultural encounters both in their personal and educational lives were highlighted. Participant 6 says: "*I think that studying at CUT deprives us of the opportunity to learn more new cultures in foreign countries. We would meet new people, we would talk with each other, we would collaborate with other people, we would learn the language better, and our job prospects would increase.*"

During the focus groups, positive attitudes towards telecollaborative learning were expressed by the participants referring to the anticipated gains of this pedagogical approach. The benefits reported pertain to the opportunity to meet people from different cultures and learn new things, the encouragement of reserved or low-achieving learners to participate, the challenge of stereotypes and the fight against racism, as well as the potential that telecollaboration may entail in fostering global perspectives: *I believe it is essential because in our times of technology and globalization being able to communicate with many people and exchange ideas with as many people and groups is possible is very useful. This way you will absorb as much information as possible and you will draw the best conclusions. Being one-sided and staying in your own place… it's not even your own place, there is no 'my', we share everything whatsoever. We are a big village.* (Participant 2).

Despite the acknowledged benefits of telecollaboration, some learners exhibited reluctance and feelings of inhibition towards participating in telecollaborative learning. Some of the reasons behind their negative attitudes included the increase of workload, and the lack of technological resources: *With all this workload that we have, all the studying, we would see it as a chore, as a burden because it would keep us behind in our other courses* (Participant 12). Other participants expressed feelings of skepticism and doubtfulness with regard to the usefulness of this activity in language and intercultural learning, compared to face-to-face communication which was considered to afford more potential in achieving these goals: *It won't be of any help in any of these aspects. It will just be a good experience. You can't learn the language by talking to somebody three times or by doing a task together; you won't increase your ICT knowledge either; you won't get to know the other culture because you will speak 3-4 times about the task; it will just be a new experience* (Participant 9).

With regard to the feasibility and implementation of the telecollaboration project, the focus groups yielded useful data that were considered in the design of the first iterative cycle. This approach is in line with design-based research whereby 'subjects' are acknowledged as part of the design process [42], contributing with their insights and constructive comments. To ensure feasibility of the project, the participants suggested that the telecollaboration should be carefully embedded in the course curriculum. Participant 1 comments: "*Basically this should be part of a program and you should be able to cope in this program because you won't have an alternative time to communicate with the other person*".

In addition, the students recommended a lingua franca approach which would place all participants "in the same language boat" [24]. A participant explains that "*…it would be much easier to communicate with someone who doesn't speak English well than with somebody who speaks English well because you will be on the same level. Easy stuff will be easy stuff for both*", (Participant 12). In addition, participants exhibited preference for project work rather than isolated tasks, and they would like to be engaged in domain-specific projects which are relevant to their field of study: "*If we

had a project, it would be more helpful in terms of motivation. Not just a task in English which is irrelevant to what you are majoring in", (Participant 9).

As for the mediating tools, the students recommended the usage of multiple technologies in order to benefit from the affordances of each type and achieve the project goals. A participant explains that *"…there should be a combination of technologies, you will connect to Skype to talk, and you will also log on Moodle and see certain things about the tasks. I believe you need more than two-three modes so as to collaborate with someone,* (Participant 9). This view is reinforced by another participant who believes that *"…you will definitely want to talk on Skype, but also use email to send a document, show your work to the other person and exchange views*, (Participant 8).

As far as the duration of the project is concerned, most participants recommended a three-month period for collaboration with the possibility of sustaining the exchange on a personal basis: "*It could last for three or four months in order to do the assignments, but then you could have the option to continue communicating as friends; that would be even better"*, (Participant 2). Finally, discussing the possibility for individual or group work, the participants were in favor of working in groups so as to feel more confident and comfortable: "*…it would be better if you had groups, so as to be able to have conversations together. You might feel scared. Being in a group will make you feel more comfortable"*, (Participant 10).

3.5 Virtual Exchange Partnership

The virtual exchange partnership was established via the UNICollaboration platform. UNICollaboration is an online platform designed to support telecollaboration at university level. The platform resulted from the INTENT (Integrating Telecollaborative Networks in University Foreign Language Education) project [43] and it has been developed in order guide university educators towards setting up, implementing and evaluating telecollaboration exchanges. Educators can find the resources and training materials necessary to learn about and to set up telecollaborative exchanges. The platform includes a partner-finding tool, a task databank, an e-portfolio for evaluating telecollaborative projects, a databank of sample projects, a project-planning tool, as well as text- and video-based training materials. A class was added on the UNICollaboration platform, in search of a partner class. After the initial contact was made by email and several online meetings that followed, a telecollaboration exchange was set up between a university in Cyprus and a university in Spain. Official invitations were sent by each partner university and an agreement was signed between the two teachers/researchers.

The two teachers/researchers conducted numerous online meetings on Skype prior to the initiation of the intervention in order to tune in to each other, discuss the research plan, and negotiate the various elements of the virtual exchange ecosystem. The two partner teachers exhibited openness to alternate pedagogical beliefs, a willingness to adapt to other approaches, compromise in task design, and find common ground [44]. The two practitioners agreed on their defined role as facilitators who would prepare their students for the exchange, debrief them following contact with their partners, and

embed the themes of interaction into their courses ensuring that tasks were well-integrated into the course objectives of both modules [44]. In addition, the two teachers established an agreement on objectives of the intervention, the selection and structuring of task sequence, the technological mediation, the project's timeline, and assessment. Since both teachers were bound by a course syllabus which included other content-based assignments and comprehensive examinations, they agreed to assign a percentage of the total work to active participation in the virtual exchange project and completion of tasks. Furthermore, the two teachers positioned themselves as researchers in the project who would rigorously observe competence learning via multiple methods. The teachers recognized the importance of overcoming any asymmetries in their institutional contexts in terms of technological affordances, abundance of resources, learners' intercultural profiles and biographies, and the value placed in language learning at each context. Both teachers acknowledged their personal contribution in the success or failure of the intervention; therefore, they committed to continuously monitoring the project in order to achieve the intended learning outcomes. Together they carefully planned the intervention, exhibiting flexibility, adaptability, and willingness to modify the original plans along the way.

4   Discussion

In general, the analysis of both quantitative and qualitative data, as well as the review of previous studies facilitated the identification of the main issues that should be considered in the design of the first intervention. The multiple data collected at this phase helped establish an understanding of the target participants' opinions and attitudes associated with the study's central themes and questions. The exploration phase contributed to the familiarization with the settings and the constituent elements of the virtual exchange ecosystem, forming a well-grounded picture of the situation under investigation. The exploration phase resulted in the proposed first intervention which was identified as a pilot inter-disciplinary lingua franca virtual exchange project between ESP learners at a university in Cyprus and a university in Spain. The targeted modules were benchmarked at B1-B2 CEFR level and the targeted participants were ESP learners majoring in undergraduate degrees at the respective universities. The interventions were designed to last for one academic semester (13–15 weeks). Communication modes included synchronous and asynchronous communication in a blended learning environment and a friendly, non-threatening atmosphere.

4.1   Preliminary Design Guidelines

The exploration phase, informed by secondary research and mixed-methods data collection, led to the evolution of preliminary principles which guided the design and implementation of the first intervention aimed at developing learners' global competence through an internationalised ESP curriculum.

The first preliminary design principle concerned the adoption of a monolingual configuration whereby participants would communicate, interact and collaborate using a shared target language, English as a Lingua Franca (ELF). This would enable learners

to engage in the exchange with confidence, adopting the role of collaborator rather than the role of tutor. The lingua franca approach would render all participants equal in the exchange, and each one would contribute to the discussion constructively without worrying about making mistakes. This was mentioned in the focus groups whereby students highlighted the importance of using a common language for facilitating communication. Therefore, in the planned virtual exchange, language would be viewed as a mediating vehicle that would facilitate the exchange of views, foster meaningful interaction and support the creative collaboration on shared tasks. This design principle was also informed by the extensive review of literature in ELF and global citizenship. The adoption of a lingua franca rather than a bilingual/bicultural configuration is in accord with a 'global' paradigm in learning, shifting away from the 'intercultural' paradigm, offering a more realistic opportunity for interaction, which resembles the kind of encounters learners will engage in their future life and career. As Lenkaitis and Loranc-Paszylk [45] argue, the use of a common language between and among interlocutors has the ability to create shared territories and it provides a suitable space to discuss topics that reflect their distinct ideologies. This can be crucial in the enhancement of global citizenship.

The second preliminary principle pertained to the participants in the exchange, namely the learners and the teachers who create together synergistic partnerships in order to inform the exchange and contribute towards the success of the intervention. The students are considered as significant stakeholders who contribute to the design, implementation and evaluation of the exchange in an effort to leverage the intervention and allow the affordances to emerge. Similarly, the teachers/researchers are cautious observers, rigorously recording instances of competence learning, and exhibiting flexibility in modifying the design if the need arises. This principle was guided by the methodological approach that was adopted in this study. Design-based research considers students as significant stakeholders who contribute to the design, implementation and evaluation of interventions. This form of participatory design is also in line with a global citizenship approach which advocates democratic participation, experiential engagement, and critical reflection upon learning [46].

The third design principle concerned the technological mediation of the exchange. The choice and deployment of technological tools should be examined thoroughly as it might affect the success or failure of the project. The different tools must be evaluated based on their unique features to support the project goals and their appropriateness in relation to the designed tasks and expected outcomes. In a global competence oriented virtual exchange, the tools and technologies selected must facilitate the development and deployment of clusters of competences, such as openness to cultural otherness or skills of listening and observing, via the use of tools that allow synchronous communication in order to establish social presence and a sense of connection with the partners. Similarly, the development of cooperation skills which is central in global competence learning should be facilitated through technologies that afford opportunities for collaborative work and co-creation of meaning and common products. Therefore, as students mentioned in the focus groups, a combination of technologies should be selected consisting of at least two or three modes, each serving a different purpose and facilitating different objectives. The analysis of the exploratory questionnaire as well as the focus groups highlighted the students' extensive use of

technology and the variety of tools and applications they are engaged with. This suggests that a multimodal environment whereby students engage with multiple technologies for interaction and collaboration would be positively received. Therefore, the planned intervention would be mediated by a technology-rich environment, affording an array of opportunities for cross-cultural communication and meaningful cooperation. A careful examination of Google+ and its features led to the selection of Google+ Communities, Hangouts and Drive as the locus of interaction, communication and collaborative task completion among the telecollaboration partners. Google + Communities were determined as a free stage for students to voice their views with confidence and creativity. The possibility to respond to or comment on posts was expected to initiate authentic, social interaction and meaningful discussions. Activities on Google+ Communities support peer interaction through informal exchanges and students can be encouraged to share their opinions without worrying about their writing styles, tones of voices, or language errors since lenient ground rules can be established in order to cultivate a freedom-of-speech atmosphere [47]. Google Hangouts were used for synchronous exchanges either via chat, audio, or video interactions. To ensure participation of all learners in the tasks and to accommodate all participants' preferences or technological limitations, students were allowed to choose between synchronous oral communication sessions or asynchronous written communication. Google Docs were used as cloud-based alternatives for word processing, utilizing their feature of simultaneous work on the same document by many users which makes it a powerful tool for collaborative writing. In addition, Moodle, the institutional learning management system used at the Cypriot university, and Aula Virtual, the institutional learning management system used at the Spanish university, were included in the technologies used within the interventions in order to manage the project locally. Moodle and Aula Virtual are password-protected, open source platforms that allow for data storage, file sharing and asynchronous and synchronous interaction. Other Web 2.0 tools and applications included Google Forms for completing the pre- and post-intervention questionnaires, Kahoot! and blubbr for playing intercultural games, Moviemaker, iMovie, animoto and other multimedia software for creating the digital stories, YouTube for creating and uploading videos, as well as PowerPoint and Prezi for developing and delivering oral presentations [48].

The fourth design principle concerns the design of tasks. Informed by weak approaches to telecollaborative task design, the planned intervention aimed at bridging the gulf between mere exchange of cultures and real global learning within an international collaboration. Therefore, task design should be established with a social perspective, aiming at facilitating the emergence of affordances for global competence learning. Tasks should be designed with a view to promoting meaningful interaction and collaboration towards achieving common goals which go beyond the sharing of and exchanging cultural information. In addition, as it was emphasised in the focus groups discussions, the tasks should be embedded in the respective courses' curricula and be informed by them in order to place the learners' academic and professional needs at the centre of the exchange. Students clearly highlighted the importance of communicating around tasks that reflect their majors; therefore, this was taken into account in the design of the proposed intervention.

The final principle is related to the choice of themes that underpin the exchange. In an emerging model that aspires to develop global competence, the topics should not be limited to the 4Fs - Food, Festival, Folklore, and Fashion. Instead, themes should revolve around critical 21st century issues, highlighting the interconnectedness of our world today and the dynamics of international partnerships in the global arena. This principle was informed by a critical review of previous virtual exchange projects which engaged learners in superficial discourse. In addition, this principle was guided by the analysis of the focus groups which pointed to the inclusion of themes that are grounded in related domain-specific areas in order to enable learners to relate with the topics. In the present study, the themes were selected with a global view, reflecting the realities of the 21st century. The selected themes underlined the construct of culture in a transnational perspective, highlighting the interconnectedness and interdependence of the world and the need for learners to consider international dynamics in order to effectively live, work and prosper in the global arena. In addition, a content-based ESP perspective informed the selection of themes in order to accommodate the learners' academic and future professional needs.

5   Conclusion

The exploratory study, undertaken as part of a three-phase design-based research, provided significant insights pertaining to the design and implementation of a virtual exchange project aiming at building ESP learners' global competences through internationalized discipline-specific language learning. Using exploratory research to guide the design of the subsequent studies helped identify the main issues that should be addressed and established an understanding of the most important contextual elements of the virtual exchange habitat before attempting to implement the interventions. The thorough exploration of the context through secondary and primary research resulted in a set of useful preliminary guidelines while rendering the learners significant contributors in the design process.

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