4. Empirical findings of the EVALUATE study of student learning

In the following section we present the main findings of the EVALUATE study. The results look first at the overall satisfaction of learners with the experience of virtual exchange before going on to look in detail at the outcomes of the studies which look at intercultural, digital-pedagogical, and foreign language learning outcomes. The section concludes by presenting the findings of the study of the teacher trainers who engaged their classes in virtual exchange.

4.1. Satisfaction with virtual exchange

At the end of the virtual exchanges, 564 participants completed the post-test survey, which included four questions about their overall satisfaction with their virtual exchanges. Taking a cut-off of 3.4 in line with Rienties, Brouwer, and Lygo-Baker (2013b), 64% of participants were positive overall with their virtual exchanges based upon the combined satisfaction scores of the four items. As indicated in Figure 9, the vast majority of participants indicated that they “learned a lot from the telecollaborative exchange”, with a mean score of 3.52 out of 5. Similarly, most participants believed the virtual exchanges will be useful for their future career, with a mean score of 3.81, with 75.2% of participants that would recommend other student-teachers to do telecollaboration, with a mean score of 3.91. Finally, 64.6% of participants indicated that they would like to see telecollaboration included in other teacher-education courses in their degree, with a mean score of 3.68. In other words, participants in general were positive to very positive about and satisfied with their learning experience.

Regarding the qualitative analysis, most of the participants reported on the positive impact of virtual exchanges on their learning experience, as these quotes and Figure 9 below illustrate:

“I learned a lot with this experience. It was different from any other activity that I have done. It help me for my communication skills, in the practice of the second language, team work, learning about the education in a different culture and more”.

“I believe that the course has expanded my perspectives about teaching and made them become more solid and clearer than before. It was certainly an eye-opening learning experience that shaped my character as a teacher and taught me how to incorporate tech and cultures in English teaching”.

In this section, we explore whether participants increased their intercultural competence, TPACK, and foreign language acquisition.

4.2. Impact of virtual exchange on students’ intercultural communicative competence: quantitative findings

There are many definitions of intercultural communicative competence, most of which include affective components, knowledge, and skills (for example Byram, 1997; Chen & Starosta, 1996; Deardorff, 2006). These are also defined as cognitive, attitudinal, and behavioural paradigms of intercultural competence (Hammer, 2015).

The quantitative tool selected for this study was developed by Portalla and Chen (2010) to measure one of these components, intercultural effectiveness, that is, the behavioural aspect of intercultural communicative competence which refers to the ability to attain communicative goals in intercultural interaction. Interculturally effective behaviour has been broken down into...
several different components which scholars have identified as accounting for effectiveness. Portalla and Chen (2010) drew on some of these conceptualisations of intercultural effectiveness and developed a 20-item survey, based on a factor analysis of 76 items found to be important for intercultural effectiveness in a review of the research. In their validated intercultural effectiveness scale, Portalla and Chen (2010) identified six factors, each with their own sub-scales:

- **Behavioural flexibility** is the ability “to observe an interaction, distinguish and make use of the appropriate behaviours, and adapt to the specific situational context” (Portalla & Chen, 2010, p. 23) and the ability to respond to various communication demands in different contexts (Chen, 2007), which implies an awareness of the environment in which this is taking place.

- **Interaction relaxation** is a factor which indexes lack of anxiety or apprehension in their interactions with ‘others’. As Portalla and Chen (2010) write, “people scoring high in the [intercultural effectiveness scale] are less characterized by an unpleasant emotional state, feelings of tension or apprehension and worry […] towards the perceived interaction” (p. 28).

- **Interaction management** and **message skills** are more closely linked to language and communicative competences, the ability to express oneself and understand one another when communicating with ‘people from different cultures’.

- **Identity maintenance** is seen as a form of facework in intercultural interactions, that is, the demonstration of effective behaviours to promote the other’s cultural identity.

- **Interactant respect** is other-orientation in interaction which reflects the recognition of the reciprocal and interdependent nature of interaction and is linked to relationship cultivation, that is, the ability to establish positive interpersonal relationships through their interactions.

We first compared the smaller subset of the experimental and control condition in Exchanges 15, 16, and 19. As indicated by Figure 10, the experimental condition participants (n=122) had slightly higher intercultural communicative competence scores before the treatment in
comparison to the control group (n=63). At the post-test the experimental condition (n=122) had a higher intercultural communicative competence total score relative to the pre-test, indicating a small positive increase over time. When comparing the increase with the control group, although the experimental group did have a higher intercultural communicative competence score at the end of the virtual exchanges, this was not statistically significant.

Afterwards, we compared the intercultural communicative competence developments with the wider group of participants, whereby we included all participants who completed both pre- and post-tests. Taking a cut-off of 3.4 in line with Rienties et al. (2013b), at the pre-test, 77% of experimental students had positive intercultural communicative competence scores, in comparison to 69% of control students. At the post-test, 83% of students in the treatment condition had positive intercultural communicative competence scores, in comparison to 73% of the students in the control condition.

In general, using paired t-tests, there was a strong and significant increase in intercultural communicative competence over time (t=8.102, p<.001), though with a small effect size, indicating that overall the 577 participants developed stronger (self-reported) intercultural communicative competence over time. Nonetheless, there was no significant difference in terms of intercultural communicative competence gains over time between the experimental and control groups.
As illustrated in Figure 11, although the experimental treatment group reached nearly 4 as an average, the students in the control condition were also more confident in their intercultural communicative competence skills.

Subsequent analyses per sub-construct did highlight significant differences between the treatment and control group, whereby the treatment group had significant post-test scores on behavioural flexibility ($F=5.494$, $p<.05$), interaction management ($F=5.089$, $p<.05$), message skills ($F=9.101$, $p<.01$) and the combined intercultural effectiveness construct ($F=4.918$, $p<.01$), all with a small effect size. In other words, in terms of intercultural communicative competence total development, there appeared to be no significant differences in developments over time.
from a quantitative perspective when compared with the control group. Nonetheless, small significant differences at the end of the exchanges in terms of behavioural flexibility, interaction management, message skills, and intercultural effectiveness were found between the treatment and control group (Figure 12 above). In the subsequent sections we will unpack the underlying reasons why some of the subcomponents of the intercultural communication skills developed stronger than others.

4.3. Impact of virtual exchange on students’ intercultural communicative competence: qualitative findings

Looking at the qualitative data can help us interpret the quantitative results. It was clear from the students’ diaries that this project presented them with some communication challenges or hurdles that they had to overcome. The project required them to communicate with distant peers in an online context and thus provided participants with opportunities for putting into practice the language and intercultural skills they were developing through their courses. However this

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**Intercultural issues in virtual exchange**

- **Communication issues**
  - Lack of engagement / motivation
  - Bad sense of teamwork
  - Lack of self-expression
  - Misunderstanding / Misinterpretation

- **Cultural issues**
  - Different work ethics
  - Different interpretation of assignments
  - Different levels of autonomy
  - Technological problems
  - Conflicting timetables
  - Conflicting time zones
  - Different organisation methods

- **Technical issues**
  - Language barrier / poor communication

- **Outcomes**
  - Gain confidence and flexibility
  - Improve the skills
  - Negotiation
  - Leadership
  - Decision-making
  - Intercultural knowledge
  - Social
  - Language
  - Collaborative competence
  - Problem-solving

**Figure 13. Intercultural issues in virtual exchange**
‘real life’ experience of online communication and collaboration meant they also had to face communication, cultural, technical, and/or linguistic issues which they may not have expected. In general terms, Figure 13 above presents the challenges participants faced and the skills developed through the project in relation to intercultural competence. The figure is based on the codes which were developed through analysis of qualitative data. The diagram highlights the complexity of virtual exchange, and the many issues participants had to face, but offers an idea of how quantitative and qualitative data and results complement one another. For the majority of participants it appears that it was actually in facing these challenges and solving problems that they acquired new competences related to intercultural effectiveness, competences which relate to behavioural flexibility, interaction management, and messaging skills, which also relate to digital competences (as discussed in Section 4.3) and language competence (Section 4.4). However, the fact that there were indeed many challenges, and students’ reflections indicated that not all students felt they managed to overcome these difficulties and remained frustrated at the end of the project, may explain the small effect size.

4.3.1. Behavioural flexibility and interaction management

The scrutiny of the qualitative data provides evidence that students had to strengthen their communication skills to fulfil the aims of the project. At the beginning of the virtual exchanges, though student expectations about the exchange were high and there was generally a positive feeling towards the exchange, in their later reflections a substantial number of students commented on the anxiety and difficulties they had initially faced. As illustrated in Figure 13, the challenges they faced included communication and language issues: what they perceived as a lack of engagement on the part of their peers, difficulties in working as a team, difficulty in expressing themselves, and/or in understanding their ‘unknown’ international peers. Some of the participants ascribed the difficulties they were having to cultural issues, such as different work ethics, different interpretations of assignments, and different levels of autonomy. Other issues were of a technical or logistic nature, such as difficulties with the tools they were using, negotiating which tools to use, time zones, and student timetables.

However, at the end of the programme, many of these students reported that they felt more confident in working in an international and intercultural environment:

“I've learned to overcome my fear of not being understood by the people from different countries. I tried to formulate my utterances as clearly as possible, and it worked. At first I was scared, but then not really. Our communication was great!”.
In addition, participants’ accounts of their experiences demonstrate their increasing willingness to understand their exchange partners’ ways of thinking and working, and adapt to specific contexts:

“It is strange at first because you can tell that your virtual partners have a different way of doing things and this is unsettling. However, as time goes by, this helps you to concentrate a lot better and to look for answers and solutions that both sides are happy with. At the same time you also make use of English and get the feeling that you have learned about aspects of another culture that you didn’t know before”.

In cases such as this, students seemed to develop behavioural flexibility as they tried to internalise partners’ ways of thinking in order to come up with different ways of accomplishing the tasks. For some students this process was also seen to influence their self-perceived identities which are negotiated through the course of the interactions:

“I learned a lot about myself and about my Mexican and Israeli exchange partners. It had a profound effect on me personally, socially and culturally because I found out what they thought about education and the way they work (which is very good indeed). I also learned more about their culture”.

A limitation of the intercultural effectiveness scale is that it was designed – like many tools measuring intercultural communication skills – to consider effectiveness in face to face interactions, not online interactions, with the additional layers of complexity that the medium of technology may introduce. Online spaces are quite different, but flexibility is equally important. A further type of behavioural flexibility we found evidence of was students’ adapting their communication strategies for their specific online contexts. This often entailed resorting to different modes and tools for communication in order to address the communication problems they were having with their peers (as also discussed in Section 4.3). Many students reported choosing tools which they were more familiar with (many cited WhatsApp) or they felt were more appropriate for communication with their peers than the learning management platforms used in class, and this allowed them to communicate more authentically and flexibly, as also reported in the section below on digital competences.

“I had difficulty communicating through Uniko because of technical problems. My group members and I solved it by texting in another social network: WhatsApp. In addition, it was challenging to agree about the lesson rundown, the digital tools and activities [we]
used in the project because of cultural gaps. We solved by listening to each other and compromis[ing].”

Another issue in measuring intercultural effectiveness using scales such as this is the assumption that an increase in perceived effectiveness indicates a positive result. Yet in practice intercultural communication and collaboration is often more complex than one might expect it to be (Jindal-Snape & Rienties, 2016; Volet & Jones, 2012). In line with Kruger and Dunning’s (1999) and Dunning’s (2011) effect, a reduction or limited change in students’ self-assessment of this component may actually indicate greater awareness of the complexity of the process once students have actually experienced it rather than the initial, perhaps ‘idealised’, conception of intercultural communication and their ability to effectively communicate in such a context.

4.3.2. Experience and engagement with difference

As reported above in the description of our approach (Section 3.2), we analysed the qualitative data using a conventional content analysis, which has affinities with a grounded theory approach as we did not initially use any predefined categories from the literature on intercultural communicative competence. However, some of the questions participants were asked to reflect on in their reflective diaries were clearly related to intercultural issues, and after our initial coding of the data we made links with the research literature to support and explain our findings.

Intercultural communication is generally considered to be about engaging with difference (ethnic, national, religious…) and indeed the word ‘different’ was the most common term in the dataset we analysed. Within this theme of difference we developed a range of sub-categories that identify how and why participants engaged with difference. The students’ reflections on difference, and the extent to which their engagement with difference leads to a questioning of their own identities and beliefs, also known as ‘distancing’ (Cummins & Sayers, 1995), can help us understand the participants’ levels of intercultural understanding and development. It is important, however, to also look at the participants’ starting points, that is, how much they had experienced and reflected on intercultural interactions prior to their virtual exchanges, as the progress they make is likely to depend on this.

4.3.3. Participants’ descriptions of their cultural backgrounds

In the first diary, which was completed before taking part in the virtual exchanges, participants were asked to write about their own cultural background (How would you describe your cultural
SECTION 4. EMPIRICAL FINDINGS OF THE EVALUATE STUDY OF STUDENT LEARNING

Responses to this question, which was deliberately open, provide us with some insights into respondents’ intercultural awareness, the extent to which they view identity and background as a complex, fluid construct, or as a static, national, and perhaps essentialist notion. Responses to this question also gave us a sense of the extent to which respondents’ may have had experience of intercultural encounters.

The question was interpreted in various ways. Cultural background is here mostly understood as having an identity which is linked to nationality, language, religion, a particular social class, or being located in or having the culture of a specific region, such as ‘American’, ‘Western’, or ‘European’. In our coding of the data, three broad categories emerged in relation to respondents’ descriptions of their cultural background: homogeneous environment, multicultural environment, and a third category, complex identity which was used for those responses where a more complex view of cultural background and identity was expressed. The majority of respondents reported coming from or living in homogeneous environments, a substantial number in multicultural environments, and a fraction of them had a more complex view of cultural background and identity, and saw themselves as being in a process of identity construction, where all experiences could have an influence on them (see Figure 14).

The notion of ‘homogeneous environment’ relates to an understanding of someone who sees him/herself as part of a homogeneous community, which might be quite diverse, but there is mention of a broader national unity which gathers together differing parts. In other words, the notion of identity is bound together with that of nationality.

“I am fully German. I was born in Germany my parents are German and so is the rest of my family”.
“I am lucky with my culture and cultural background. Almost all my family comes from Spain, but from different parts, so I know many cultural aspects of different territories in Spain”.

The second example expands the idea of being Spanish to embrace unity in diversity, as the respondent mentions different cultural aspects within the Spanish territory, but there is still homogeneity in the sense of being part of a Spanish national identity. ‘Homogeneous’ also means restricted in terms of engaging with difference, e.g. “I grew up in Limhamn, a suburb outside of Malmo which almost entirely consists of a homogeneous population. In other words, my cultural background is not diverse”.

By contrast, we applied the category ‘multicultural environment’ when participants referred to their background as multicultural or they claimed to be multilingual. This category includes people who have grown up in relatively homogeneous contexts, but who report experiences of living abroad and/or studying other cultures and learning foreign languages which they say have impacted the ways in which they interact and see other cultures.

“As I am from the Netherlands I can describe my background [as] multicultural. I have friends from all different cultures over the world, and for me it is really easy to connect to them”.

“I am Polish woman, a Catholic. I grew up in the centre of Poland and now I am living in Warsaw. I speak some languages. Besides Polish and English I know French very well, I know a little bit of Spanish, Russian and Latin. This year I started learning Swahili”.

The responses do not suggest that this contact with other cultures has had any impact on the respondents’ own identities or offered them different perspectives, and there are hints of ethnocentrism and ‘othering’ in some of the comments, with a common pattern of ‘us’ versus ‘them’.

In the third category, ‘complex identity’, respondents put into question their own identity and/or see it as a symbiosis of diverse experiences they had in other countries and cultures. They report an experience that has a long-lasting effect on the ways in which they see and perceive themselves and the world around them. Here participants see themselves as bi-multi-lingual/bi-multi-cultural, e.g. “I grew up in Greece though having Polish parents. My personality has been definitely affected by this fact. What is more, I am bilingual (Greek & Polish). I believe that these facts made me more
open-minded”; Europeans, e.g. “I am first of all European, then Polish. I don’t identify all that much with the Polish culture when set against the rest of Europe, but I’ve noticed that when faced with more distant cultures (East Asian, American) I do identify as European”; international citizens, e.g. “I am German but I have always been traveling a lot. I would therefore describe myself as an international person who is very interested in the cultures of other countries”; or they might have a multicultural mindset, such as the following quote:

“I grew up in Sweden, but I’m originally (and born) in Croatia. So, I grew up in two different cultures which shaped me a lot as a person. I did an exchange in Macau, where I met and befriended a lot of friends from a lot of different countries and continents. Which again, shaped me even more. It makes you think, understand differently. Because, I felt like I was very open-minded and understanding before because of my background, and I was but not really, because you never truly understand, and it’s something that’s very hard to explain. Your thinking completely changes. But, when interacting and listening to others’ thinking, who have different backgrounds from yourself, it just, changes you. I definitely got a huge reversed culture shock when I came back to Sweden. It was hard to re-adapt with a new you”.

4.3.4. Participants’ engagement with difference through virtual exchanges

During the virtual exchanges, participants engaged with difference on multiple levels. Indeed, ‘different’ was the most frequent word in the data we collected, as can be seen from the NVivo word cloud (Figure 15 below). People and students were also among the most frequently used terms, highlighting the human dimension of the participants’ virtual exchange experience.

We identified five levels of engagement with difference in their reflections, which we describe below:

- **(1) No difference.** Participants see no significant difference between their national and educational culture and that of their international peers: “even coming from other countries, we are all the same. We all have obstacles, jobs and other challenges in life, but we are all looking for the same thing, which is to improve ourselves as professionals in the field of education”.

- **(2) Minimising difference (‘we are all the same after all’).** Participants are aware of cultural differences, but do not scrutinise them, showing a low level
of reflexivity regarding this issue: “I learnt that our cultures do not differ much. Of course, we live in different countries so our attitudes may vary however, thanks to the globalisation it is possible to know many things about other cultures. Also, Spain and Poland are both members of the EU so there is some kind of homogenisation of the educational process”.

- (3) **Exploring different perspectives on education.** Students compare their educational systems and reflect on how the differences and similarities might shape their own views on education as well as their expectations and the challenges they faced in the exchange itself: “we used the platform to talk about the education system and the schools that they have there. We compared these with our schools and saw the differences. We then asked questions and continued on in this way to keep the conversation going”, as well as the following: “students like us, have similar life styles but in some aspects seem to have a different idea of cooperation work. This might result from their lecture being organized differently than ours and therefore us having expectations they weren't told to fulfill”. In these extracts there is an engagement with difference beyond static national culture categories, but there is an us-them orientation, with respondents’ own culture being the standard by which others are measured.

- (4) **Deeper engagement with difference.** Participants compare their cultures, habits, and ways of thinking and/or behaving, demonstrating a higher level of self-reflexivity and openness towards their foreign peers: “I learned that we have a different way of thinking and acting. This does not mean that one is better than the other, just that they are different and I think it is really interesting to be able to learn and even experience the habits and ways of life, which change depending on what we are used to doing in our everyday lives”. The use of inclusive ‘we’ in the reflection above suggests that the participant is also reflecting on the cultural embeddedness of their own beliefs and values and how one’s life experiences also affect these beliefs.

- (5) **Seeing complexity in diversity.** Participants reflect on the complexity that exists between different cultures and also within their own in a more abstract/theoretical way: “I think this experience will help us all to understand a little bit more about educational backgrounds around the
world and how the culture of each country plays a fundamental role in the language learning-teaching process”. There is an understanding of the many different dimensions of cultures, identities and beliefs, and of the factors which can influence this.

These different levels of engagement echo Bennett’s (1986, 1993) developmental model of intercultural sensitivity, which describes different ways people react to cultural difference. In Bennett’s (1986, 1993) model, there is a progression along a scale from ethnocentric positionings of denial, defence, and minimisation of difference to ethnorelative attitudes of acceptance,
adaptation to, and integration of difference. This model is problematic in several respects, for example in the conceptualisation of intercultural sensitivity as a scalar, linear phenomenon, and in assuming the monocultural learner as the starting point (Liddicoat, Papademetre, Scarino, & Kohler, 2003). Furthermore, his, and other studies of the development of intercultural sensitivity and awareness (Hammer, 2015), have been developed for and extensively explored in the context of study abroad, and have rarely been applied in virtual exchange contexts. What our analysis of the qualitative data has found is that the levels of intercultural sensitivity identified in the data bear some similarities to the positionings in Bennett’s (1986, 1993) model, and development of intercultural sensitivity through virtual exchanges is in some ways similar to that which can emerge in some study abroad experiences. To reach a level of critical engagement with the complexity of intercultural communication is not easy through virtual exchanges (Helm, 2017) – nor indeed is it guaranteed through physical mobility (Jackson, 2019). It also depends very much on the starting point of the participants. However, through carefully planned intercultural interventions it is possible (Jackson, 2019).

Within the context of this project, where a majority of participants started with limited intercultural experiences and awareness as well as a degree of anxiety towards the exchange, minimisation of difference was the most common attitude we found in the data from the end of the project. However, in some participants we found evidence of a shift in mindset from largely ethnocentric positionings to a realisation that there are other perspectives on education and related issues. This is an important step as it can be the trigger for further exploration and learning:

“At the first time, I was a bit afraid because I did not know how this worked. However, after the first contact, I had the necessity of knowing more about their culture and the way their [sic] study in their country, because, as we know, not all the schools and colleges have the same methodology. Now, it is a pity that this experience is almost over, but I hope I could participate in another telecollaboration soon”.

4.3.5. Triggers and barriers for engagement with difference

If we are exploring the development of intercultural understanding, it is important for us to understand what triggers participants’ deeper engagement with difference and their developing greater understanding of their own language(s) and culture(s) in relation to others. As discussed above, in some cases, participants’ entered the project with what we described as a multicultural background. In a small number of cases this led to a dismissal of the virtual exchanges as a
banal experience with low levels of intercultural engagement, whilst in other cases this led to
greater reflexivity on the exchange itself, how this differed from other experiences they had
had and considerations of how they could further engage with their partners: “I would say that
this experience overall had a positive effect on my learning. This project was quite different
from what I have been going through already in my education, so doing this unconventional
thing broadened my views and developed my abilities”. A different participant said: “I learned
a lot about compromise and different approaches to teaching. We often reached a point where
we could not find common ground so we had to make adjustments a lot. They have different
approaches to teaching English and it was difficult from time to time”.

The following quote illustrates a high level of intercultural engagement when the participant
challenges stereotypical views on different cultures and reflects on the value of virtual exchanges
for the acquisition of intercultural competence:

“Everybody have a stereotype about other cultures, it is normal when you only know
something about other country watching tv or reading some remarkable news. But the
point is to have a deepest knowledge about a culture or country and break this stereotype.
The best way to do that is travelling, then you realised we all are more similar than we
think. Other way is to keep in touch with people from abroad and this is our opportunity
with this program. With my friend Tamara in my group we have discussed a lot about how
different or similar we are, and how could be their education system, how can we take
advantage of them... etc. In my opinion this a really worth task because I am convinced I’m
learning a lot, and I don’t have this feeling with other tasks in our degree”.

*Shared histories*

Clearly there are factors within the exchanges themselves which may lead to deeper engagement,
and we identified several possible triggers for greater curiosity. Exchanges which involved
countries with historic links between them, in particular shared histories of colonialism or
genocide as in the case of Brazil and Portugal, or Israel and Germany, seem to have led to deep
engagement and reflection on the part of participants. This could be because there was some
shared knowledge but also different experiences and feelings towards historic events which
led to a more strongly felt need to engage with one another and explore others’ perspectives –
even though the shared histories were not explicitly addressed. In exchanges where there was
a strongly perceived, tangible cultural difference, students’ curiosity was also high. Reflecting
on each other’s culture, a Brazilian student said: “actually, we are similar due to Brazil being a
country that was colonised by Portugal. The curiosity is the most important thing to explore the habits from other locales”.

**Contextual factors**

It was beyond the aims of this study to explore in detail the differences between each individual exchange, but clearly there were contextual factors which impacted the levels of intercultural learning and engagement with difference on the part of the students (see Case Study 1 for the description of an exchange which led to strong intercultural learning). Though the teachers in this project all adopted a similar model of virtual exchange, the extent to which students had time to critically explore the intercultural dimension of their exchange and the nature of the discussions and reflections they had in class are likely to be important factors in the development of intercultural sensitivity and awareness. There were clearly differences in the extent to which the teachers themselves focussed on intercultural learning with their respective classes, the time allotted to and the degree of reflection on the interactions the students were having with their partner classes, the types of content they were discussing, and how they interpreted and addressed the challenges they may have been facing.

**Language as a barrier**

We found that language was in some cases a barrier to deeper engagement, for example students not having the linguistic competence to ask meaningful questions or respond to questions they were asked in a complex way (see Section 4.4). In exchanges where students in both classes were using their first or main language of communication, there appeared to be more of a focus on intercultural understanding and reflection from our analysis of the diaries (see also the first case study later in this study).

**Too much task-orientation?**

A further barrier to deeper engagement was different degrees of task-orientation. Some participants’ partners had an almost exclusive focus on tasks, with limited time for more social, interpersonal interactions:

“The difficulties lie in the tasks. I feel, our German group has a different attitude towards completing tasks on time and thoughtfully than our partners. We also seem to understand the task differently sometimes. The forum posts then vary a lot and it takes some time
to get the conversation directed to discussing what we’re meant to discuss. When our conversations get going they are often interesting, though we ask more about our partners’ culture than the other way around”.

In some cases participants saw this as a cultural issue which impacted their partner students’ behaviours, and our data suggested that many students in some classes had a strong wish for social interactions and relationship building which partner classes did not always reciprocate or feel necessary. Others perceived it as teachers’ different orientations to the exchange, such as the following quote:

“Challenges were that sometimes we had different instructions from our lecturers so clarifying what we had to do took up quite a long time sometimes. To solve the problem we talked to the lecturers”.

Importance of reflection

Finally, it is important to also consider the limitations of the research approach we adopted. In order to encourage students to be honest in their reflections on the exchange and also in-class activities it was decided that the diaries would be anonymised and would be gathered by the research team rather than the teachers themselves. This meant, however, that the teachers did not have direct access to the students’ reflections (in some cases the teachers asked students to share their reflections with them but the students could choose whether to share these same diaries with the teachers or edit them). This could have led to a lack of engagement on the part of the students in the completion of the diaries, since these were not directly linked to their course requirements. Furthermore, there could have been missed opportunities for discussion and learning in the class, as some of the teachers may not have been aware of the students’ experiences. Reflection is a key component of the learning and meaning making process and is particularly important for the type of experiential learning that virtual exchange offers (Kolb, 2015; Mezirow, 1991).

4.3.6. Implications

Our findings suggest that the intercultural learning opportunities which virtual exchange offers future teachers, particularly those who have had limited opportunities for intercultural interactions, are important because they are likely to be working in contexts which are quite different from the educational context they experienced when at school, given the increase
in immigration in Europe in recent years. It is fundamental for future teachers to be open to engaging with difference and that they develop intercultural awareness and understanding as they prepare to become teachers in multilingual and multicultural contexts. Ideally they should also develop an understanding of the complexity of identities and culture, an openness and curiosity to difference, rather than essentialist conceptualisations of national cultures. Given the limited number of future teachers who experience study abroad, virtual exchange is an important way of providing that initial contact which may spark their curiosity and willingness to seek contact and further engagement with those that are ‘different’ from them. However, it is important that if the aim of an exchange is to develop students’ intercultural sensitivity, then teacher trainers should be equipped for this and they should dedicate time to this in class.

### 4.4. Impact of virtual exchange on students’ digital-pedagogical competence: quantitative findings

In order to compare the TPACK development over time, we first compared the smaller subset of the experimental and control condition in Exchanges 15, 16, and 19. As indicated by Figure 16 below, the control group (n=77) had a slightly higher score at the TPACK pre-test, while at the post-test the experimental condition (n=127) had a slightly higher score. The average learning gain for the experimental group was 0.30 (SD=0.50), while the average learning gain for the control condition was 0.18 (SD=0.51), although this effect was not statistically significant. In other words, over the (on average) 65 days of the exchange, both the experimental and control group students increased their TPACK total scores as they were learning in their context, but there was a slightly higher effect for the experimental condition.

Afterwards, we compared the TPACK total developments with the wider group of participants, whereby we included all participants who completed both pre- and post-tests. Taking a cut-off of 3.4, at the pre-test, 70% of experimental students indicated having positive TPACK scores, in comparison to 73% of control students. At the post-test, 88%
of students in the treatment condition indicated having positive intercultural communicative competence scores, in comparison to 80% of control students. In general, using paired t-tests there was a strong and significant increase in TPACK over time ($t=13.447$, $p<.001$), indicating that overall the 579 participants developed stronger (self-reported) TPACK over time. As indicated in Figure 17, in the wider group, the TPACK scores at the pre-test was slightly lower at the pre-test in comparison to the control group (although not significant). At the post-test the TPACK scores of those who received treatment was higher than those in the control group, although only marginally significant at $p<.07$.

Figure 17. Pre- and post-TPACK scores of experimental and control condition (n control=63 , n experiment=516)

Figure 18. Pre- and post-test comparison of subcomponents of TPACK (n control=63 , n experiment=516)
Subsequent analyses per sub-construct did highlight significant differences between the treatment and control group, whereby the treatment group had significant higher gains in technology knowledge ($F=8.235$, $p<.001$), technological pedagogical knowledge ($F=5.720$, $p<.05$), and TPACK ($F=3.692$, $p<.05$), all with a small effect size. In other words, in terms of TPACK total development, there appeared to be no significant differences in developments over time from a quantitative perspective when comparing to the control group (Figure 18 above). Small significant differences in technology knowledge, technological pedagogical knowledge, and TPACK do give a suggestion that these pre-service teachers developed a stronger understanding of the complexities of teaching online. In the subsequent sections, we will unpack the underlying reasons why some of the subcomponents of the TPACK skills developed stronger than others.

4.5. Impact of virtual exchange on students’ digital-pedagogical competence: qualitative findings

How do these findings map against the insights gained from the qualitative data? Based on a qualitative content analysis (see Section 3.2) the following themes emerged from the entries in the learner diaries:

- technology used;
- challenges encountered when using technology for teaching;
- most important insights gained in terms of technology used;
- experienced benefit of technology use (self);
- projected benefit of technology use (self);
- projected benefit of technology use (students);
- methodological use of tools;
- technology chosen to enhance learning; and
- technology chosen to enhance teaching.
The following contains further information about each theme and representative examples from the learner diary entries.

4.5.1. Technology used

This word cloud, as illustrated in Figure 19, reflects the tools and applications recurrent in the data and how often they were mentioned (tools and apps in large font and at the center of the cloud.

Figure 19. Word cloud of the tools and applications mentioned in the TPACK data analysis made with the word cloud facility within NVivo
appeared more often than other items). ‘Point’ stems from ‘PowerPoint’, frequently used by the student teachers in their diary entries. Google or Google Docs, for example appeared very often which underlines the students’ positive collaborative experience, since many virtual exchanges used Google Docs to have participants jointly create texts or tasks in their international teams, a tool which – somewhat surprisingly – many of them had not known before the exchange.

4.5.2. Challenges encountered when using technology for teaching

There was a substantial amount of reflective comments on issues referring to technology use during the virtual exchanges. These were mainly due to a lack of familiarity with bespoke tools and applications the student teachers were asked to trial, and challenges with bandwidth and online connectivity.

For example, when student teachers experienced technical problems with their learning platform, they moved to social media: “I had difficulty communicating through Uniko because of technical problems. My group members and I solved it by texting in another social network: WhatsApp”.

Although these were experienced from a learners’ point of view (for ‘experiential modeling’ see further down), the student teachers mostly embraced the challenges and made numerous suggestions as to how they solved the problems and/or how they would go about solving them in the future.

4.5.3. Experienced benefit of technology use (self)

The student teachers regularly mentioned the concrete benefit experienced from using technology for themselves:

“Our first task was useful because now I understand that video chat is important in teaching. It improves our speaking skills”.

But when student teachers only mentioned that they had used an online tool or application without explaining how they benefited from its use, this reference was not included in this theme but in the theme ‘Technology used’ (e.g. “So far, I’ve used YouTube, Google Docs and Prezi”). Examples for the theme ‘Experienced benefit of technology use (self)’ include reflections that go beyond considerations of a purely pedagogical nature. They include perceived advantages of a
tool or application on a personal level provided they were linked to the tasks carried out during the virtual exchange. The following diary entry illustrates this:

“In my first task I created an ‘About me’ presentation from an online website that allowed me to display information about myself. I have learned that it’s important to select technologies that appropriately reflect you as a person, especially when creating a presentation about yourself. When picking which online tool to use to complete the first task I decided to use the ‘About Me’ website because it allowed me to accurately reflect who I am as a person”.

There was often overlap between putting into practice the affordance(s) of a tool while carrying out a task (i.e. ‘Methodological use of tools’) and – as a result – becoming fully aware of its affordance(s), and an ‘Experienced benefit of technology use’. Here is an example:

“I have learned that technology can help you in your teaching approach. We used Google Docs to make a picture book”.

Student teachers experienced the benefit that tools can help them while teaching, in this case using Google Docs to create a picture book together with their partner. At the same time, they learned how to put a specific tool, i.e. Google Docs, to methodological use.

It became apparent that the virtual exchange element in their initial teacher education programme allowed the student teachers to go through the following cycle of exploratory practice which draws on Allwright and Hanks’s (2009) concept of exploratory practice (see Figure 20 below).

Using specific tools when working on the tasks in the virtual exchange made student teachers realise the affordances of such tools (see Google Docs example above). The reflection phases in the blended learning environment of the virtual exchange facilitated this process, making students aware of the interrelationship between using a specific tool such as Google Docs to create a text together, thus facilitating the creation of the product the task instructions asked for. Experiencing the benefit of the tool and becoming aware of its affordance in a pedagogical setting will allow student teachers to integrate technology into their future teaching.

Thus, they often mentioned the use of a tool for a specific purpose even though they have not implemented it in their teaching practice yet. They had, however, found out about its potential
through the virtual exchange they took part in (‘experiential modeling’). As this student teacher highlights: “My group created a Prezi presentation. It is a presentation program that allows you to explore and share ideas about a topic, in our case about Leon. I did not know this program before so it was a great discovery”. Such future orientated reflections were captured under the next theme.

4.5.4.  *Projected benefit of technology use (self)*

The student teachers’ reflections under this theme are about how they will use technology trialed and tested during the virtual exchange in their future teaching practice, and what the added value is in terms of their didactic approaches. Hence, this theme looks at the future benefit of tools used in the virtual exchange from the teachers’ perspective, such as communicating with other teachers or how to research or present material more efficiently. Here is an example from a student teacher working with a new tool:

“I didn’t use prezi before. I thought the platform is hard to work with, so I had not used it, but when we started to work on the task, I decided to make an effort and try it out. So our
group figured out how to use it. I will definitely use it as a teacher because it offers variety and helps creating interesting presentations”.

Thus s/he explains how the ability to create more engaging presentations will make her/him a ‘better’ teacher.

4.5.5. Projected benefit of technology use (students)

Student teachers also need to learn which tools will best support their future students’ competence development. Facilitating interaction and discussions in class is one important field as this comment highlights:

“I think that online debating tools such as Padlet can be used to start a discussion because they allow students to put their arguments/answers to words first before discussing them plenary in class”.

Consequently, the references of this theme are mainly reflecting the student teachers’ considerations as to how they will use technology trialed and tested during the virtual exchange in their future teaching practice to improve their students’ learning process – in terms of motivation, for example – and thus support them in becoming ‘better’ learners, such as in this student teacher’s comment:

“Technology can be a very useful tool. It can enhance the learning experience by helping teachers use class time for practice and by motivating students. In Task 3, my group decided to work with fandom and include technology, which facilitated students’ communication with their peers”.

This also illustrates student teacher’s gain in pedagogical content knowledge when working with technology inside and outside the classroom.

4.5.6. Methodological use of tools

As a result of the virtual exchange, students showed that they know how to choose a tool for a specific purpose or function based on tool affordances, for example, by selecting a bespoke tool to develop a specific competence (e.g. using Google Docs to collaboratively create, edit, and comment on a text).
4.5.7. Technology chosen to enhance teaching/learning

Here the diary entries highlight student teachers’ learning process as to their pedagogical knowledge of working with bespoke tools and applications. In extension of ‘Projected benefit of technology use (students)’, references here clearly show which technical tool they would use for a specific pedagogical intervention in the classroom. A few of them showed this competence at the start of the virtual exchange, either because they had already used technology in a teaching context, or they had observed another teacher doing so:

“As a teacher, in a unit regarding Multicultural England, I used a platform such as SymbalooEdu to give information and display fun resources about the theme to the students. I also used this platform to make webquests, fun activities, which were used by the students at home. To evaluate this unit and others, beside the paper examination, requested by the school, I have also used Kahoot and the response was really positive. The results were above average in the majority of the cases”.

4.5.8. Most important insights gained in terms of technology use

Many student teachers commented on the new tools they had encountered and had learned to use in their exchange, such as Google Docs, Padlet, Zoom, or others (see ‘Technology chosen to enhance teaching/learning’). They also pointed out the impact this work has had on their pedagogical approach when thinking about their future learners and – as this student explains – discovering methodological opportunities in the use of new tools they had not been aware of before:

“I used to think that using a PowerPoint presentation with images and colors and a Kahoot activity now and then was ‘innovating’ in the [English as a second language] classroom. Thanks to this exchange I have not only discovered new tools, but reflected about them and applied them into a task that could be perfectly used in a real class. For example, I did not think that an exchange like the one we had been engaged in would be carried out this way. I thought that it would be like a Skype conversation or sending emails to a group of people. However, thanks to Task 3 [collaboration on technologically-based task design], I have seen how learners can actively use their L2 to think critically even if their English is not at its higher level by giving them materials they can understand and a challenge that engages them”.

Thus, as a result of experiencing virtual exchange in his/her initial teacher education programme, this student teacher was able to integrate new tools appropriately into the task design for a lesson. In addition, the following comment highlights the realisation that one’s teaching approach changes through the integration of technical tools, from a more teacher-centred to a more learner-centred focus:

“Incorporating technological tools into our lessons changes the way we teach. As a teacher, I can choose which tools I want to use in my lessons, but apart from PowerPoint presentations, most tools would shift the focus from the teacher to the students. Using technology forces me to think more about the learning process I want my students to go through, which skills I want them to practice or acquire, what language I want them to use or learn, and so on”.

Before, during, and after the exchange, student teachers had to answer questions (see above) four times in their diaries. To understand student teachers’ competence development during the virtual exchange projects, we now compare their responses in Diary 1 before the exchange, and those in Diary 4 for the different themes, e.g. ‘Experienced benefit of technology use (self)’. The numbers on the left hand side in each graph represent the overall number of references for each theme across all exchanges. Hence, the numbers do not represent single words, but parts of sentences or a number of sentences, depending on how much of the content of a response relates to the specific theme, such as ‘Experienced benefit of technology use (self)’. For example, in Figure 21, out of all the responses from all exchanges, we found approximately 690 references in Diary 4 to the ‘Experienced benefit of technology use (self)’. The references we selected were positive since we had to show student teachers’ competence development. There were also some negative references where student teachers, for example, wrote that they did not get to know any new tools, but in relation to the positive references those numbers were very low and negligible in
the overall picture. The visual information in the bar charts is underpinned with brief verbal explanations.

The clear increase in references in the themes for ‘Experienced benefit of technology use (self)’ and ‘Projected benefit of technology use (self)’ (Figure 22) suggests that the so-called experiential modeling approach (Hoven, 2006) which was chosen for the design of virtual exchange – especially in the task sequences – has had a positive impact. In experiential modeling, online tools and processes teachers are expected to use in their future teaching are experienced from a learner’s point of view. In many exchanges, for example, student teachers worked with Google Docs to collaboratively create texts with their international partners. When they then had to design technology-based tasks for school contexts, they often had their future students work with Google Docs as well because they had experienced it very positively in terms of collaboration. This also explains the increase in references for ‘Projected benefit of technology use (school students)’ from Diary 1 to Diary 4 (Figure 23).

The differences between the number of references for both ‘Projected benefit of technology use (self)’ and for ‘Projected benefit of technology use (school students)’ at the beginning and at the end of the virtual exchanges (Diary 1 versus Diary 4), are, in fact, startling. They underscore the positive influence of virtual exchange on awareness of and attitude towards technology use for
formal educational purposes. This can be explained by what is referred to in the literature as the ‘double mediation’ effect (e.g. Kurek & Hauck, 2014): in virtual exchange, the processes the student teachers and subsequently their learners are involved in are at least mediated twice: by the technology used and – in the majority of cases – by the use of a second or additional language, or a lingua franca. Hence, virtual exchanges do provide the ideal set-up for fostering digital competence development in general and digital-pedagogical competence development in the context of initial teacher education in particular. The findings in relation to ‘Methodological use of tools’ speak to the same point (Figure 24).

The qualitative data corroborates the findings from the quantitative data analysis, namely that the treatment group had – among other TPACK components – higher gains in technological pedagogical knowledge. The increase in references found as ‘Methodological use of tools’ is not as dramatic as for other themes (see above). A possible reason is the fact that it takes time and therefore involvement in more than one virtual exchange before substantial knowledge and competence in methodological use of online tools, and thus their pedagogically informed application is acquired. Yet there was clearly some gain in insights to this effect during the virtual exchanges which took place during the EVALUATE project which points to the added value of integrating virtual exchanges into initial teacher education provisions (Figure 25).
Here the difference between the number of references in Diary 1 and Diary 4 is most pronounced. While, at first glance, one might conclude that the learning process in terms of technology use during the project turned increasingly more problematic, a closer look at the reflective comments coded in Diary 4’s entries shows that the students have become increasingly aware of the challenges associated with online environments, tools, and applications, and also have had an opportunity through the training to learn how to deal with them.

Small significant differences in technology knowledge, technological pedagogical knowledge, and TPACK in the quantitative data also suggest that the student teachers developed some understanding of the complexities of teaching online. As a result, they are better equipped to overcome difficulties posed by new and different environments, tools, and applications in the future. This finding thus also highlights the acquisition of transferable digital-pedagogical competences through virtual exchange in initial teacher education.

4.5.9. Proposals for developing digital-pedagogical competence

The evaluation of both the quantitative and the qualitative data shows that overall the tools and applications used by the student teachers while engaging with the tasks/task sequences promoted in EVALUATE together with triggered reflections on their experiences, had a positive impact on their digital-pedagogical competence development. It has also confirmed previous findings (Fuchs, Hauck, & Müller-Hartmann, 2012) which highlight the fact that virtual exchange does, in fact, provide the ideal set-up for task-based digital competence development in initial teacher education. Recommendations for future competence development to this effect in the context of virtual exchange based on the insights gained from the project are as follows.

It is necessary to raise awareness among future teachers that technology use in the classroom has benefits beyond new ways of presenting content to learners. It provides new opportunities to engage with materials and other learners, locally as well as across time zones and geographical distance, especially in the context for virtual exchanges which are – by default – mediated by technology and therefore require the use of online tools and environments.

Sufficient time needs to be allocated in virtual exchanges for initial teacher education to explore the affordances of individual tools and applications (text only; text plus visual communication; text, visual communication, and audio; etc.): how they facilitate the learning process overall and how they allow the learners to reach milestones and – eventually – clearly defined learning goals.
on their learning journey. As such, in the case of initial teacher education, these goals should include the acquisition of technological-pedagogical competence.

Although it is clearly part of allocating sufficient time, the need for built-in reflection on technology use in the (future) classroom is paramount. Therefore, it must become an integral feature of initial teacher education offerings. As we were able to demonstrate, virtual exchange embedded into initial teacher education provides the ideal set-up to this effect.

Virtual exchange provides a safe environment to experience challenges with regard to technology use in initial teacher education. Both challenges encountered and the strategies trialled to overcome these (including information about the nature of the challenge and the tool or application involved) should be systematically collected and made available in the shape of a repository for future student teachers – at least at institutional level, ideally regionally, or even nationally. Building and maintaining such a repository – even in its most basic form – requires commitment at institutional, regional, and/or national levels as well as funding for its creation and maintenance. Once in place, it will provide an invaluable resource for virtual exchange-based initial teacher education and beyond.

4.6. Impact of virtual exchange on students’ foreign language competence: quantitative findings

Foreign language competence development is complex and discontinuous, and takes place over long periods of time (Ellis, 2015, pp. 297, 307). Virtual exchanges are normally short term (in the case of EVALUATE, lasting approximately five to ten weeks). Without an intervention study, using corpus research methods, it is a challenge to demonstrate conclusively (e.g. by tracing ‘uptake’ or other changes in output) that foreign language competence development has taken place. We have therefore relied, in addressing this question, on participant testimony. This takes two broad forms which combine quantitative with qualitative data. The first is derived from a survey of participants, administered following the exchange, the second is drawn from participants’ comments in an online reflective journal.

Participants were asked ‘How (if at all) has your ability to use a foreign language developed in the course of the exchange?’ They were given the option of indicating whether they judged that their foreign language competence had (1) improved much, (2) improved a little, (3) not improved at all, or (4) actually got worse. It would be inappropriate to expect anything more than minor improvements in the course of a short-term exchange; “[m]ost people arrive at their
fluency only as a result of hard work, expended over a considerable period of time” (Crystal, 2010, p. 388). Moreover, self-report data is necessarily subjective. Any attempt to calibrate the scale of any improvement would have been spurious. In presenting the survey results, therefore we have combined categories (1) and (2) to offer an overall indication of whether participants felt that their foreign language competence had been positively impacted by the experience of virtual exchanges. The results are as follows (see Table 3).

Table 3. How (if at all) has your ability to use a foreign language developed in the course of the exchange? (combined data)

<table>
<thead>
<tr>
<th>Ability to use foreign language</th>
<th>Has improved</th>
<th>Has not improved</th>
<th>Has got worse</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to interact with foreign language speakers</td>
<td>71%</td>
<td>29%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Ability to understand</td>
<td>70%</td>
<td>30%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Range of vocabulary</td>
<td>69%</td>
<td>31%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Confidence in using the foreign language</td>
<td>64%</td>
<td>36%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Grammatical accuracy</td>
<td>56%</td>
<td>44%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Fluency in speaking</td>
<td>48%</td>
<td>52%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Accuracy of pronunciation</td>
<td>35%</td>
<td>64%</td>
<td>1%</td>
<td>100%</td>
</tr>
</tbody>
</table>

These outcomes are encouraging, since it appears that the aspects of foreign language competence in which virtual exchange participants most frequently report gains are the ability to interact with foreign language speakers and the ability to understand. These language skills are aspects of pragmatics, which deal with the (often indirect) ways in which meanings are made and interpreted in communicative contexts. They are clearly essential in interpersonal (and intercultural) encounters since they enable the growth of empathy and the development of an ability to convey it. In other words, they make possible the building of rapport. As for the other language skills, it is unsurprising that in a series of interactions which are focussed on the communication of messages and meanings (rather than on the learning of structures), a higher percentage of participants report lexical development (69%) than grammatical development 56%)

Caution is required in basing findings on what participants say, rather than what they do. But EVALUATE learners' insights into their language development are in line with recent research into the impact of technology use on foreign language learning. Dooly (2017) notes that “telecollaboration appears to be advancing the [...] paradigm towards what Littlewood
calls ‘communication-oriented language teaching’” and explains that communication-oriented language teaching “emphasises the use of language in ways that are personally relevant to the learners while helping them develop communicatively, cognitively, and as a ‘global’ person through collaborative learning” (p. 125). Sykes (2017) argues that “telecollaboration via digitally-mediated tools is [...] an effective context for the learning of pragmatic behaviours as well as the application of patterns in authentic discourse” (p. 126).

There is however, some cause for concern in the data. Fluency in speaking and accuracy of pronunciation in the foreign language appeared to benefit less from virtual exchange than other aspects of foreign language use. The reasons for this will be explored in a subsequent case study.

### 4.7. Impact of virtual exchange on students’ foreign language competence: qualitative findings

Perusal of the qualitative data provides an explanation of the scores reported above and enables us to draw a broader and more nuanced picture of foreign language competence development over time in EVALUATE. Applied linguists will be aware that not all the competences necessary for successful interaction were addressed in our survey. There are very straightforward reasons for this. The overall survey was long (it had 21 questions). Our questions needed to be succinct. There are some concepts which require explanation to be made clear to a lay audience. One such is pragmatics. Instead of asking about participants’ pragmatic competence, we asked instead about the ability to interact. The two are related but not coterminous. However, participants’ free text comments allow us more clearly to identify what appears unequivocally to be references to pragmatic competence. What they all have in common is that they show learners attending carefully to the signals they are receiving from their interlocutors, adjusting to perceived needs and limitations in a context of mutual learning, and using the foreign language to show understanding and appreciation of their partners’ efforts to communicate. This is pragmatics at work.

#### 4.7.1. Pragmatic competence

Pragmatics “considers language as an instrument of interaction, what people mean when they use language and how we communicate and understand each other”\(^1\). It looks beyond the literal meaning of an utterance and focusses on how implied meanings are constructed, in the light of context. Pragmatic competence has two aspects. Sociopragmatic competence is the

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\(^{1}\) [http://all-about-linguistics.group.shef.ac.uk/branches-of-linguistics/pragmatics/what-is-pragmatics/](http://all-about-linguistics.group.shef.ac.uk/branches-of-linguistics/pragmatics/what-is-pragmatics/)
awareness of what forms of expression (known as ‘speech acts’) are appropriate in a particular communicative context. Pragmalinguistic competence is the ability to control one's use of these linguistic forms. Here is what EVALUATE participants had to tell us about their development of pragmatic competence:

“I think that I've developed my speaking and communicative skills during our video conferences and chats, where the main idea was not to show off about our language competences, but to be understood and efficient in our work”.

“Maybe I have used more informal and simpler language than I am used to because at Uni we use academic language, but when talking with older people we use an informal register”.

“As in every part of this exchange, I've practiced making my English understandable and adjusting my speech to my interlocutor's level”.

“However, what I believe I have improved is the way I explain thing[s] in English to people that have a lower level, I mean, I have learn[ed] to simplify my ideas in order to assure they are understood”.

“I learnt to use a lot of language elements concerning politeness, appreciating and compliments that I usually don’t use in this amount. But it was important to show and articulate that you appreciate the others’ effort and work because they wouldn’t know it if you don’t tell them directly or text them”.

The learning recorded by participants in these comments is not that of new items, or rules, of language. In fact several comments make it clear that participants were interacting with partners whose level of proficiency in a shared lingua franca was inferior to their own. What they learned, however, were advanced communication skills: the use of simplified lexis and syntax for purposes of clarity; the adoption of a less formal register to adjust to their interlocutors; and above all, sociopragmatic awareness (‘show ... that you appreciate the others’ effort’) and pragmalinguistic control (‘I learnt to use a lot of language elements concerning politeness’).

Pragmatic competence is indispensable for successful communication. Without it, little genuine understanding, let alone agreement, will be reached. It has a “critically important role [in] digital contexts” (Sykes, 2017, p. 127). Yet it is difficult to teach; in the words of one expert,
“the challenge for foreign or second language teaching is whether we can arrange learning opportunities in such a way that they benefit the development of pragmatic competence in L2” (Kasper, 1997, n.p.). Virtual exchange, based on appropriately designed tasks, is clearly rich in such opportunities.

4.7.2. Lexical competence

There is a close link between pragmatic and lexical competence development, as the acquisition of additional lexical formulas equips learners to perform a wider range of pragmatic functions. Both of the following testimonies show virtual exchange participants applying themselves consciously to learning vocabulary, in the shape of useful formulaic expressions. The second suggests clearly that the learning of such functional formulas plays a role in developing pragmatic competence in the foreign language, as argued by Kecskes (2014). Here, the emphasis is on friendly, informal greetings:

“We tried to use different types of expressions and verb forms to practise vocabulary and make sure that writing messages did not become monotonous”.

“Yes, we learned many new elements like typical friendly greetings. We only knew informal greetings and we didn’t know our virtual exchanges partners. I used words like ‘greetings’, ‘hugs’, ‘first of all’ etc. I jotted down some of the informal ones after I had learned a bit more. This is a useful way of learning more of these kinds of words”.

4.7.3. Grammatical competence

Though fewer in number than comments recording the development of pragmatic competence, a number of free text journal entries nonetheless make clear that the development of grammatical competence was also a feature of the exchange. It appears to have been engaged in consciously. We reproduce here comments making reference to specific aspects of grammar as being more convincing than broad generic statements. They are of two kinds. Firstly participants reflect on their own language use (‘more modal verbs than I use to use’ [sic]). They also recount how, as trainee teachers, they honed their pedagogic techniques and skills (e.g. illustrating and explaining the use of the present and future tenses), or summoned up the confidence required to correct a partner’s grammatical errors. Teachers of foreign languages will understand just how important the acquisition of such confidence is. It is significant that virtual exchanges afforded participants a space in which they felt able to develop in this way.
“The elements of language that were relevant to our task that we designed through the task assigned to us were as follows: descriptive language (adjectives), present tense (describing culture), new vocabulary related to the celebrations of New Years, oral presentation, and past tense (writing a reflection of how the lesson went)”.

“Probably more modal verbs than I use to use, mostly to make suggestions or requirements”.

“In this task, I had to review the future simple because one of our virtual partners made a mistake. He omitted the main verb when performing a present simple sentence and I tried to explain to him his mistake so that he did not make it again. Also, I incorporated some examples so that it was easier to him to understand the explanation and so that he could see other different contexts. I managed to use funny sentences because I think that it can help him to memorise the grammatical theory. I hope that the explanation was clear enough for him and that it can help him in future times to communicate better with other people”.

“Gendered nouns (agua, encantado)”.

“Confidence to correct grammatical mistakes”.

4.7.4. Confidence

Though they were not specifically asked this question, a number of participants indicated that their confidence in using or speaking a foreign language had improved in the course of the exchange. Even those who did not specifically use the term, wrote of:

“Feeling able to express myself”.
“Audacity in using English in real-world situations”.
“Ability to express your ideas with a foreign language”.
“Ability of giving your opinion in the other language”.

Confidence is extremely important to foreign language learners, precisely because it empowers them to produce more of the target language, taking risks when necessary and learning in the process. Gains in confidence are regularly reported by participants in telecollaborative exchanges. It may be that this again is linked to a focus on the communication of meaning, rather than on formal accuracy. This is a hypothesis that requires further research.
4.8. Concluding comments

On the whole, the data suggests that virtual exchange has a positive impact on foreign language competence development. Only in relation to two aspects of foreign language competence, ‘fluency in speaking’ and ‘accuracy of pronunciation’, was the percentage of participants who reported some development outweighed by those who indicated that they had made no improvement. The reason for this is relatively clear. As one respondent indicated: “[t]he only skill that hasn’t improved is speaking fluently, because we had no opportunity to speak within our project work”. That is a message for future organisers of virtual exchanges for whom improved foreign language competence is an intended learning objective.