Overcoming language barriers and boundaries: Video-mediated eTandem

Tanya MCCARTHY

Kyoto University
Institute of Liberal Arts and Sciences
Yoshidanihonmatsucho, Sakyo-ku, Kyoto, Japan 606-8501
mccarthy.tanyamiranda.7n@kyoto-u.ac.jp

Matthew ARMSTRONG

Kyushu University
Faculty of Languages & Cultures
744 Motooka, Nishi-ku, Fukuoka, Japan 819-0395
armstrong@flc.kyushu-u.ac.jp

Ces dernières années, une initiative a été lancée dans les établissements d'enseignement supérieur du Japon pour faciliter les partenariats de recherche et la collaboration aux niveaux local et international. Les objectifs sont de fournir aux jeunes chercheurs une plate-forme pour perfectionner leurs compétences et promouvoir les échanges scientifiques. Cet article rend compte d'une initiative de recherche collaborative entre deux universités nationales au Japon qui ont utilisé une plate-forme *eTandem* à des fins d'échange scientifique. Les échanges en face à face et par vidéo ont permis aux étudiants de partager des idées de recherche, de travailler en réseau et de jeter les fondations possibles pour de futurs projets de collaboration. Les participants (*n = 26)* se sont rencontrés chaque semaine dans un environnement d'apprentissage informel. Des enregistrements audio de 13 dyades en tandem ont été collectés et analysés afin d'identifier les défis linguistiques et les échanges les plus significatifs. L'analyse des données a révélé que les étudiants étaient capables de donner et de recevoir des commentaires critiques sur divers aspects de leur apprentissage, en particulier dans les domaines suivants: la conception de posters, le contenu de la recherche, la présentation, la structure organisationnelle de la recherche scientifique et la terminologie hautement spécialisée. Nous avons noté que tout gain dans ces domaines variait de façon importante entre les individus et résultait peut-être davantage d'efforts multiples effectués au cours de la période plutôt que de l'expérience *eTandem* en tant que telle.

Mots clés:
apprentissage en tandem, apprentissage collaboratif, autonomie de l'apprenant, anglais scientifique, environnement d'apprentissage informel.

Keywords:
tandem language learning, collaborative learning, learner autonomy, SciTech English, informal learning environment.

1. Introduction

The Japan Society for the Promotion of Science (JSPS) has operated in Japan for the past 70 years as an independent institution that seeks to foster young researchers and promote scientific cooperation. In the 1990s, there was a significant increase in information exchange among young scientists (MEXT 1997) as global participation in joint research projects became part of the research culture. Since then, there have been greater calls for collaborative

partnerships to help young researchers to hone skills and promote scientific exchange. SciTech projects around the world, for example, have promoted scientific literacy (Oliveira et al. 2019), strong communicative skills in science (Scalice et al. 2019; Wang et al. 2018), and the creation of an international network of senior and junior researchers (Hastings et al. 2010). For these reasons, the researchers embarked on a joint research to facilitate a scientific Tandem Language Learning (TaLL) exchange program that would offer students a real-world opportunity to interact in an international setting with young researchers in various fields of study. This paper reports on this collaborative initiative.

TaLL has been defined as a collaborative, autonomous, and reciprocal method of language learning (Vassallo & Telles 2006). In its purest form, languages are kept separate and each interlocuter devotes equal amounts of time to learning the second language. Over the years however, TaLL has evolved with the digital transformation of second language education as well as the recognition of the necessity of encouraging more authentic language use in and/or outside of the formal learning environment. Email and video-based software have helped to build virtual bridges between international communities. Today, there is a plethora of online options available from various social networking sites, web conferencing tools, telecollaboration platforms and smartphones applications to create a virtual network which can expose second language learners to authentic language in wider contexts (O'Rourke 2007). Despite current and possibly future transformations of TaLL, it remains consistently grounded in the same basic principles: learner autonomy, language exchange and reciprocity.

1.1 Learner autonomy

Learner autonomy, as one of the fundamental principles of the universities in which this research took place, was central to the TaLL program. "Self-teaching" or "self-learning" based on dialogue was promoted as the main teaching approach across all departments. Instructors were encouraged to act as guides to help students take a more proactive role in the global arena. Little's definition of learner autonomy as "a capacity – for detachment, critical reflection, decision-making and independent action" (1991: 4) meant for the tandem learner in this study, to show the ability to regulate learning, and become critically reflective on a metacognitive level.

1.2 Language exchange

Traditional TaLL programs entail that learning partnerships exchange first languages. Tandem pairs function, in turns, as a model for their native language and then as a second language learner. As TaLL adapts to new and changing technologies, partnerships have now moved beyond second language exchange to international collaboration for professional training programs and for this study, scientific research exchange.

1.3 Reciprocity

Reciprocity, in essence, is the underlying tenet guiding the collaborative dimension of TaLL, giving it its strength. Tandem pairs must contribute equally to the relationship in terms of time, energy and interest. They must decide on learning objectives, tasks they would like to engage in, and how long, where and when they wish to meet. If objectives are not being met, tandem dyads will require the maturity to alter their learning approach for the partnership to remain mutually beneficial. Participants in this study were mostly master's and doctoral students, and as such, had the motivation, interest, and drive to participate in this mutual exchange.

With the central tenets decided, a TaLL model that would meet the requirements of a scientific exchange/intercultural program was designed based on an analysis of successful eTandem learning models.

2. eTandem learning models

eTandem learning models are widely used for educational purposes. However, its flexibility enables it to be used in wider pedagogical circles and contexts. A database created by *unicollaboration.org* showcases a wide range of cross-disciplinary telecollaboration and virtual exchange projects in various contexts which clearly demonstrates that eTandem is, and continues to be, a proven learning method that can be used for language learning purposes, increase intercultural awareness, and connect learners in distant geographical spheres. Aspects of the following programs informed decisions when designing the TaLL program.

Tian & Wang (2010) examined learner gains in language proficiency and intercultural understanding through the use of Skype. Their study was conducted with language learners in Australia and China, students taking on the role of "expert" and "learner" equally. The Soliya Connect Program (Elliott-Gower & Hill 2015) aimed to deepen intercultural understanding, but also widen perspectives on socio-political issues. This program was unique as shared knowledge of current issues was the focus rather than only language exchange. A separate teletandem model in Brazil (Leone & Telles 2016) similarly used VOIP tools (*Skype* and *Google Hangouts*) to engage students in out-of-class learning; however, what distinguished this program from others was the emphasis on inter-institutional integration and collaboration rather than as an individual endeavour. A new model appearing more and more these days, which especially intrigued the researchers, is the lingua franca model in which monolingual communication occurs between non-native speakers from various cultural backgrounds. This is becoming more commonplace in today's internationally oriented, social networking arenas, not only for intercultural exchanges, but also professional training programs focusing on content. It is

also the direction that this research took as the program got underway. Fig. 1 illustrates these current variations of eTandem in practice and the revisions made for the TaLL model used in this study.
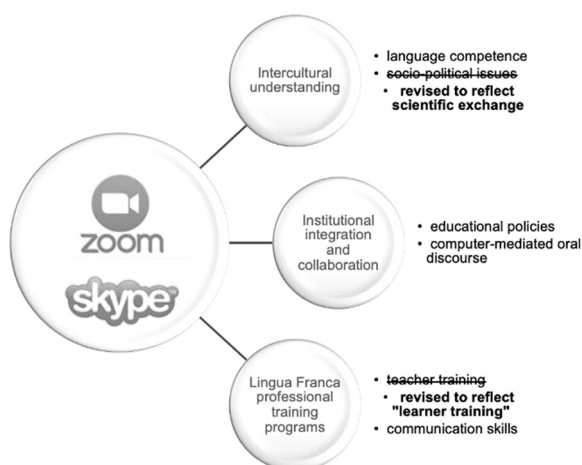

Fig. 1: eTandem Model variations which informed the study

3. Embedding the TaLL framework within the curriculum

The aim of this funded project[1] was to encourage Japanese and international students to participate in more out-of-class communication. Before undertaking such a large project, it was necessary to identify if there was a gap between current curricular goals and learner needs. Thus, a curriculum analysis was first carried out. It addressed three areas: policy, practice and process. Main weaknesses in the curriculum which became apparent were a lack of authenticity in language materials and transferability of academic skills for scientific research practices (McCarthy & Armstrong 2019). A learner needs analysis was then undertaken with the participants, to determine existing knowledge, abilities and research skills they wanted to improve. It was concluded from the analysis that the target learners had a high level of communicative competence to perform effectively in daily conversational and academic contexts. However, in research and professional environments, students considered their abilities to be inadequate. The gap, which the researchers thus aimed to fill, was to implement a program in which students could mutually benefit from sharing knowledge and experiences of research, networking, and conferencing. Accordingly, we set up the informal Learning Environment for Academics and Researchers through Networking (iLearn).

---

[1]   Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan, Grant-in-Aid for Scientific Research (KAKENHI), project n° 19K00791/Facilitating Scientific Research and Intercultural Exchange through TaLL

3.1 iLearn

Four points emphasized in iLearn were as follows:

- linguistic competence
- knowledge-sharing for real-life contexts
- intercultural exchange
- connection to the university's educational philosophy and policies

Of the 26 participants in the program, 20% were Japanese. International students came from China, Vietnam, Cambodia, Korea, Bangladesh, Taiwan and Thailand. As such, students were able to improve linguistic competencies as well as increase awareness of different cultures through communication about research. The iLearn model followed current trends in educational practices of synergizing formal classroom learning and informal out-of-class learning (such as blended or self-access language learning), but with the language of scientific research being the focus. In this sense, the iLearn program is unique among typical TaLL projects conducted in other settings. Fig. 2 illustrates the organizational components of iLearn.

Fig. 2: iLearn eTandem model

A short, intensive 4-day, pre-tandem workshop was initially held to help students practice networking, discussion and research skills for poster and oral presentations. The workshop also helped students to bond and begin to form tandem pairs naturally. The morning session of the workshop introduced specific research skills students felt they lacked when in real-world situations. Students were paired off in face-to-face tandems in the afternoon sessions to connect theory with practice. The workshop culminated in a simulated poster session for an international conference, complete with a networking event. A consultation room was reserved for ten weeks to provide a space for face-to-face tandem partnerships for those who preferred this method to video meetings. Several computer-mediated communication studies have found that choosing interesting conversation topics over the duration of a tandem program is one of the challenges in maintaining successful tandem dyads (Beckett & Slater 2005; Okdie et al. 2011; Schwienhorst 2010). Thus, students were asked to pick weekly themes for their discussion on the basis of a list of research-

based topics[2]. To ensure students regained their agency as learners, organizing a list of research-based topics in advance ensured that there was always a bank of subject matter of mutual interest. For most students, the preferred tandem option was video-mediated collaboration, as there were few chances to meet face-to-face due to conflicting schedules, lab experiments, report deadlines, and language classes. *Skype* or *Zoom* were used for synchronous video conferencing, as it allowed these students to interact in real time through screen sharing technology. Asynchronous communication via *LINE*[3] was used by students to make quick decisions regarding scheduling and learning content for video conferencing.

4. Data collection and analysis

Data were collected by two methods. First, a descriptive case study design explored linguistic competence in using research language; and second, a grounded theory approach analysed meaningful discourse in dialogic exchanges.

4.1 A case-study of a tandem dyad

The tandem partnership between Learner A (a Japanese nurse-in-training) and Learner B (a Japanese doctoral student) who remained partners for the entire 10 weeks provided qualitative data. Tandem sessions lasted 45 minutes, during lunch time, when the teacher and students were available. Students met face-to-face four times and exchanges via *Skype* were held for the other six meetings. Learner B used the consultation room each week to set the audio recorder and the researcher collected the audio recording after the meetings. For this study, it was decided not to use video-based recordings, as it was seen as intrusive (Denzin & Lincoln 2011) and the researcher did not want the tandem pair to monitor their actions or language output. Direct observational research was also dismissed, as the researcher did not wish for students to interrupt their conversation and ask for assistance. It was of primary importance that the learners were given freedom and responsibility without interference from the researchers. An audio recorder was thus placed on a small table in the room or under the display (Fig. 3). In some cases, when students were working out how

---

[2]   The following themes were negotiated between the students: 1. Reporting on current issues and needs; 2. Answering basic research questions for both general and specific audiences; 3. Describing the rationale for their chosen methodology; 4. Designing a research poster and analysing current posters for international conferences; 5. Describing data collection and analysis; 6. Describing eye-catching design elements and communication techniques for effective poster presentations; 7. Preparing for Q&A: specifically, challenging questions; 8. Practicing for presentation: Feedback and reflection-on-practice; 9. Job-hunting and interviewing for a professional position; 10. Publishing research papers and writing proposals. Themes were seen as guidelines which could be changed at any given moment.

[3]   LINE is a freeware application for instant communication on electronic devices. Users can exchange texts, images, video and audio, as well as conduct free video conferences.

to share documents and screens, jostling papers or moving around to practice a presentation, the quality of the recordings suffered. Therefore, short sections of these particular recordings were not transcribed.

Fig. 3: Tandem consultation rooms

4.1.1 Analysis of linguistic choices in three excerpts

Excerpt 1: Meeting 2

Learner A is applying for an international position and needs help with her CV.

Learner B is a doctoral student and between his master's and doctoral studies, he gained work experience as an IT engineer.

> *A: I will do apply job for CDC.*
> *B: This is important.*
> *A: Yes, kind of. But, it will be failed, but I wanna challenge.*
> *B: Why do you say it will fail?*
> *A: Because lack of skill, especially in language.*
> *B: What do you need to do?*
> *A: Well, the program is on polio. I need…how do you say in English?* [...silence… she looks up the word in a dictionary…] *proficiency skills and doctor's or nurse's license is in….uhmm… public health? Uhm, certification? License is by practice in hospital. And additional language skill.*
> *B: Ah, you need to have a certificate but you don't have work experience?*
> *A: A little. I need communication skill and leadership skill*
> *B: So your, uhm, rirekisho[4]…*
> *A: CV*
> *B: CV?*
> *A: Yes, in English CV.*
> *B: What CV means?*
> *A: uhm…. [laughs] CV.*
> *B: [laughs]*
>   ---- [break in excerpt] ---
> *B: Where is your CV?*
> *A: I can send it. I am thinking now of communication skill, like language*
> *B: What is your language skill?*
> *A: I have English, Japanese and a little bit Amharic.*
> *B: Amharic? What is Amharic?*
> *A: I worked in Ethiopia. It's communication for daily life. It's the Ethiopian focal language.*
> *B: ehhh? sugoi[5]*

---

[4]   *Rirekisho* is the Japanese word for "Curriculum Vitae (CV)".

[5]   *Sugoi* is the Japanese word for "That's great!"

In the pre-TaLL workshop, Learners A and B demonstrated an ability to express themselves on a range of general topics, but once the conversation switched from familiar topics to specialized lexis, they both begin to struggle.

At the beginning of this excerpt, Learner A does not show a controlled usage of lexis or syntax whereas Learner B can provide immediate corrective feedback through usage of the correct linguistic form in question formation and verb tense.

> *A: I will do apply job for CDC.*
> *B: This is important.*
> *A: …it will be failed, but I wanna challenge.*
> *B: Why do you say it will fail?*

As the conversation continues, Learner B is able to reconstruct the language exchange coherently and clarify meaning by summarizing what Learner A is trying to explain.

> *A: Well, the program is on polio. I need…how do you say in English?* [...silence… she looks up the word in a dictionary…] *proficiency skills and doctor's or nurse's license is in….uhmm… public health? Uhm, certification? License is by practice in hospital. And additional language skill.*
> *B: Ah, you need to have a certificate but you don't have work experience?*

What is notable in this dialogic exchange is that although Learner B does not explicitly tell Learner A her mistakes, he is able to give indirect feedback. Recast as corrective feedback is a frequently employed strategy used by teachers to show the correct form without explicit identification or explanation of the error (see, for example, Ellis & Sheen 2006). As the topic becomes even more specialized for a business English context, they both begin to struggle with finding the precise words for effective communication.

> *A: A little. I need communication skill and leadership skill*
> *B: So your, uhm, rirekisho…*
> *A: CV*
> *B: CV?*
> *A: Yes, in English, CV.*
> *B: What CV means?*
> *A: uhm….* [laughs] *CV.*
> *B:* [laughs]

Learner B, for the first time, resorts to Japanese when he does not know the English vocabulary. Learner A responds this time with the direct translation, but she does not expand further. This became a meaningful learning moment; however, neither student considered using a dictionary. After listening to the recording, in the following week, the researcher was able to suggest that they record unknown words in a notebook to improve ability to express ideas accurately not only within their specific fields of study, but also for professional purposes. As the researchers' role was that of facilitator, any advice or feedback was given solely through suggestions of learning techniques, or specific actions that could help them to understand the connection to a real-life context.

At the end of each session, learners were encouraged to prepare for the next session by making a plan of action. At the end of meeting 2, they decide to exchange CVs to discuss further in meeting 3. As they wind down, Learner A mentions that one of her additional languages is Amharic.

> B: Where is your CV?
> A: I can send it. I am thinking now of communication skill, like language
> B: What is your language skill?
> A: I have English, Japanese and a little bit <u>Amharic</u>.
> B: Amharic? What is Amharic?
> A: I worked in Ethiopia. Its communication for daily life. It's the Ethiopian focal language.

"Amharic" is specialized vocabulary for even native speakers of English, but Learner A could easily use this word without hesitation. This implied that she was already familiar with using it in a particular context. For the researchers, this clearly indicated that learning specialized lexis for research and professional contexts is essential in how effectively learners are able to communicate in a real-world situation.

Excerpt 2: Meeting 3

Learner A and B have sent copies of their CVs to each other after their meeting, and in the following session they discuss it further.

> A: This CV is so good. It have many experiences.
> B: My background is in IT development, so maybe it is different from yours. I have many years of experience working in a company, writing programs, so I write about these experiences here.
> A: Your CV have many experiences and networking with different companies.
> B: My strength on my CV is my work experience. I am not working now. I worked before I started doctor's program. When I worked for some companies as an engineer, I just concentrate on working. I didn't, uhm, didn't focus so much on another thing like networking. At the time, I didn't want to have anything else. How about yours?
> A: So, I have worked in Africa, in Ethiopia, training nurses in how to deal with HIV and sexual education programs. I worked in so many areas, in observing these, so I have some ideas about sexual education and health, but it is not public health. It is private activities. The job is public health.
> B: But these experiences are connected to your communication skills?
> A: Yes, I have consultation with patients. But I cannot write detail. Around medical area, doctors are so sensitive, the topic, so they can't show, uhm, can't say sensitive topics, but medical research want to show the beginning of the research, so they have to register the planning. Sometimes, doctors can't say what they are doing. They have to finish the research, be careful not to give ideas. Not so much sharing.
> B: uhm, so you cannot write your work in detail, but you can write your experience. Your CV does not say about the type of participation experience. And you say last time language. You should write language skill because you cannot say communication part in detail.
> A: Yes, I will finish now. Thank you for your CV. I have to submit tomorrow and then I will wait if I get email for interview.
> B: Good luck!
> A: Thank you. You went to conference last week? How was it?

There is a noticeable difference in the flow of conversation between Learners A and B in the following week. Whereas Excerpt 1 was filled with extended silences, and short sentences, in Excerpt 2, Learner A's lexical and grammatical choices are more accurate, the sentences are longer, and the rate of speech has increased which indicate a level of developmental progress. Learner B

continues to ask Learner A open-ended and follow-up questions which helps to elicit longer, more purposeful and meaningful responses.

> *B: …How about yours?*
> *B: But these experiences are connected to your communication skills?*

This language-building technique is another strategy that Learner B uses effortlessly, which shows his ability as a skilled communicator. It is interesting that without teacher guidance, the learners are able to use effective conversational skills naturally. It is apparent from the exchanges that they have both read over each other's CVs carefully and have the necessary vocabulary to express themselves more fluently and spontaneously. For the researchers, this was seen as strong evidence of the need for learners to prepare in advance for discussions in academic, professional and/or research contexts, an essential component of tandem programs (Batardière & Jeanneau 2020; Brammerts 1996).

Excerpt 3: Meeting 10

Learner B talks about current research in his field and the conversation with Learner A turns into a discussion from the viewpoints of researchers in two very different fields.

> B: *Well, this company makes some robots which resemble creatures. This person, the creator develops the robot and kicks the robot and the robot tries to stand up again and again. So, I am writing language for AI programs and I am interested in learning how to write for this kind communication between human and robot. For me, there is a very close relation between human and artificial intelligence. That is a good point, however my research, 80% of my research is data analysis. My research needs more… I also interested in human, human, humanity or…*
> A: *There was a humanity conference last week here, I couldn't attend, for medical and social research, but not include your area. They share information on newest trends. I think there should be collaborate with humans, mixed with AI…*
> B: *Computer Science and AI and…*
> A: *Yes, I feel some dangerous things. You have scope through artificial, and I have scope through human, but human already affected in good and bad communication way, actions changing, feelings changing, thinking changing, so AI or other artificial things, nothing to think… Do you understand?* [laughs] *Humanity. AI should understand more about this side. Nature, emotions.*
> B: *Well in my research, more than 80% I focus on the computer science, but some researchers develop dialogue system and consider the communication between human and computers, so they must think about how humans behave when they hear some utterance uhm, speech system. So maybe we should collaborate between fields more.*

Linguistically, the language in the final meeting is quite different from the earlier meetings particularly with turn-taking. In collaborative discourse, knowing when to speak without overlapping or interrupting, is essential for successful and meaningful conversational exchanges. This final excerpt provides an excellent example of Learners A and B's ability to discuss their research. Learner B has critically evaluated his current doctoral research and feels that it is lacking in an area in which he has little knowledge. Learner A is more specialized in this field and so he asks for her opinion. This conversation is the most challenging of all recorded sessions, as both students struggle throughout to switch lexis from a specific audience to a general audience.

Learner B opens with:

> B: my research, 80% of my research is data analysis. My research needs more… I also interested in human, human, humanity or…

Immediately, he begins to struggle with lexis outside of his computing field of study. As his voice trails off twice, the conversation is picked up smoothly and naturally by Learner A whose expertise is in behavioural sciences:

> A: There was a humanity conference last week here, I couldn't attend, for medical and social research, but not include your area. They share information on newest trends.
> B: Computer Science and AI and…
> A: …I feel some dangerous things. You have scope through artificial, and I have scope through human, but human already affected in good and bad communication way, actions changing, feelings changing, thinking changing, so AI or other artificial things, nothing to think… Do you understand? [laughs]

As Learner A tries to connect human intelligence with that of AI, she also begins to falter as she also does not have the necessary lexis to discuss another field. She laughingly asks, "Do you understand?". Whereas in the first recordings, Learner A depended more on her dictionary, she now attempts to convey her meaning by using different words. She tries again to express her ideas using more general words that Learner B can connect with:

> A: …Humanity. AI should understand more about this side. Nature, emotions...

Learner B picks up on her cues and also tries to change his lexis. As can be seen from the example below, he adjusts his vocabulary from "dialogue system" to more comprehensible language, "utterance" and finally to "speech system"

> … some researchers develop dialogue system and consider the communication between human and computers, so they must think about how humans behave when they hear some utterance uhm, speech system.

In the end, both Learner A and B seem to agree that there should be more interdisciplinary collaborative research.

> B: So maybe we should collaborate between fields more.
> A: I think there should be collaborate with humans, mixed with AI…

In the pre-tandem learner need's analysis, students had noted that speaking to professors about their research was not difficult because professors understood all the various complexities of their research, as well as the subject area in depth. However, when giving presentations to peers or lab members and more general audiences at international conferences, they found it extremely difficult to convey their message effectively. In this sense, TaLL helped these learners to not only improve conversational exchanges through natural turn-taking and adjusting lexis from specific to a general audience; but also, more importantly, they could understand the benefit of mutual collaboration or exchanges with researchers in other fields.

4.2 Meaningful exchanges

For the researchers, engaging in meaningful exchanges signified an exchange of knowledge or critical reflection on learning which could be of mutual benefit to students in a real-life research context (feedback or advice), rather than simply an exchange of information (greetings or sharing of personal information). Through qualitative coding (see Appendix 1), patterns in the data were found by identifying recurring themes (Urquhart 2013). The researcher used the categories to interpret the transcript data of the tandem partners. Initial coding categories and numerical density of each category are shown as Tab. 1.

Meaningful Exchange Category	Density
1. Design	18
2. Content	17
3. Delivery	12
4. Organizational structure	05
5. Lexis	02
TOTAL	54

Tab. 1: Coding categories and numerical density

4.2.1 Design

The majority of meaningful exchanges was connected to poster design, possibly as a result of the time spent on this area during the initial workshop. Students in post-graduate programs were expected to present their research at domestic and international conferences, and for some, the workshop was their first experience in designing scientific posters. As students could share screens and/or documents, they had more time to critically evaluate posters than other aspects of their research. Exchanges were focused mostly on poster layout and readability. The following are examples of meaningful exchanges in the design category:

> *I cannot read. This is too big and it is not useful. You do not need to put your questionnaire on the poster. This information is not helping anyone.*

> *Your poster's heading says, "Research Question". This is not a question it is a statement. Sometimes in a poster session, the presenter is not there but the poster is up. They come to read the poster, so you cannot explain.*

> *Key information should be big. This font size is too small for a poster. Bigger than 12.*

4.2.2 Content

Having detailed knowledge of the specific content-area is essential for the researcher to clearly and confidently explain and expand upon the research topic, especially during Q&A sessions. This was the second area of density as students asked for clarification and expansion of specific points. Discussions were mostly concerned with presentation of data and students tended to be

especially critical of data collection methods and analysis. The following are examples of meaningful exchanges:

> What is the number of subjects, uhm participants in your study? Do you think that this is enough? What is your idea?

> There should be a comparison of results. I think this pie graph shows the rate, but I think you need another pie graph. So, one more pie graph. Young people's gender gap is this website, so if you want to discuss more the gender gap in another age, you need another age data. So, is there any difference? This information says, "the global gender gap report in 2018 shows that the index of gender gap better for fields economic education, health and politics". This index is better than the pie graph.

4.2.3 Delivery

There were fewer instances of feedback on delivery, possibly because of the limitations of video-mediated communication. In face-to-face situations, students are able to see a wider perspective, but tandem partners could only see faces. Delivering an effective virtual presentation was not a skill covered during the workshop. Learner exchanges focused mainly on time-management, speech rate, and attitude and less so with socially constructed rules of interaction (eye contact and facial or hand gestures). The following are examples of meaningful exchanges:

> The method, result, discussion took too long. You are saying too much information. Only important points in the discussion.

> "As you can see from above" is too casual. You should talk about the important data.

> Your character should be so more bright. Make sure that you have eye contact and face your audience.

4.2.4 Organizational structure

The structure of scientific presentations is an integral part of how well research is received by an audience. There was not much feedback on structure as students had several years of experience giving academic presentations and writing academic essays in their undergraduate language and content-based courses. The following are examples of meaningful exchanges:

> You didn't write an introduction on the poster. You need an introduction and also references since you have a source here. You do not need to put your research questionnaire on your poster. Where is your hypothesis?

> The method is too long. Balance the presentation better.

4.2.5 Lexis

Before giving a presentation or writing a paper, it is important to understand the type of audience who will be attending the talk (whether general or specific) and use appropriate lexis accordingly. There were however, few instances in the recordings where students gave corrective feedback directly. This is possibly because the students communicated at a conversational level with their tandem partner for the most part using informal or academic level lexis instead of highly technical vocabulary. The following is an example of a meaningful exchange:

> *The word "variance" will show the gap…uhm, variance means "bunsan" in Japanese. Do you know? Variance is degree of distance with average, so if the variance is low number and average is individual and short. And if the variance is bigger, then average to individual score is low. So, I think that is a better word.*

The feedback classification system constructed here, intended to illustrate meaningful exchanges found in the data. For future research in this area, more precise definitions of each category will be required to produce a clearer understanding and interpretation of the dialogic exchanges.

5. Discussion

This study was carried out in three distinct phases: 1) pre-TaLL; 2) TaLL implementation; and 3) post-TaLL. Each phase offered insights into how to improve the program. Each phase offered insights into how to improve the program.

5.1 pre-TaLL

Initially, research participants were asked about their motivations for joining a tandem program. Results of this open-ended question aimed to help tailor the program to suit learners' specific needs. Figure 4 illustrates that improving presentation and communication skills were the main motivators for participating in the project.
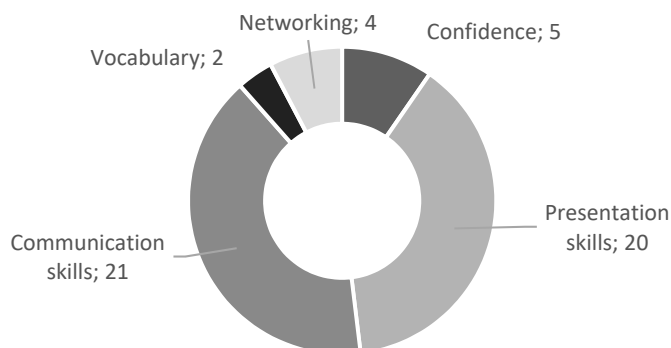
Fig. 4: What is your motivation for wanting to participate in a tandem program?

For many of these students, the intercultural aspect of communicating with international students was a big attraction. This has been a similar finding in several other studies over the years (Stickler & Emke 2011; Tardieu & Horgues 2019; Woodin 2001, 2003). A second survey (Tab. 2) sought to determine student's feelings about presentation skills, cultural awareness and confidence.

Self-evaluation	Yes	Pre-tandem Just fine	No
1. I understand the conventions of speaking in an academic context		33%	67%
2. I can express my ideas clearly		40%	60%
3. I can use appropriate vocabulary when discussing my research		33%	67%
4. I can plan and present a poster in my subject area		47%	53%
5. I can speak to a general audience using only notes or my poster as a guide		47%	53%
6. I can communicate with cultural sensitivity and awareness		71%	29%
7. Overall, I feel confident that in the future, I can give a poster presentation		33%	67%

(*n=46*)

Tab. 2: Pre-TaLL survey results

The results clearly indicate learners' lack of knowledge about conventions in academic and research contexts. Only in the area of intercultural awareness did they feel confident. This was mainly due to the fact that in the workshops, 80% of the participants were international students who were already comfortable conversing with students of various nationalities. Japanese students who participated in the workshop stated that in their research labs, there were typically one or two international students. The survey was given to students again at the end of the program to determine if there were any areas of improvement.

5.2 TaLL-in-Practice

During the program, students met directly in the consultation rooms or via video-based platforms. Poster design, research content, delivery, organizational structure of research presentation and specialized lexis were the five categories students focused on during their meetings. The lack of focus on syntax was initially surprising, as Japanese students typically tend to focus on form over content (Fujiwara 2018). However, on reflection, as the participants shared a similar status of researcher at one of Japan's top research institutions, it seemed more likely that they would focus their attention on the research content.

5.2.1 TaLL successes

The TaLL project can be regarded as somewhat successful in a few ways. First, iLearn attracted more students than expected, which meant that there was, without a doubt, a need for more support for an informal research environment where students could practice presentation, conference and networking skills with students across various disciplines. Having authentic communication opportunities was also a major benefit for the students as they could understand strengths and areas to improve, as well as develop relationships with students from different cultural backgrounds. Finally, the students could feel an increased sense of confidence as a result of being able to communicate comfortably in a real-life situation. Authenticity in tandem partnerships is an

essential component of tandem research projects (Brammerts 2003; Guth & Helm 2012) so that students can experience first-hand the intricate relationship connection between culture and language. Independent learning (Menezes De Oliveira 2011; Sasaki & Takeuchi 2011) and heightened intercultural awareness (Dodd 2001; Schwienhorst 2003) also played a role in helping to sustain student interest. These are some of the benefits that have been upheld as central to successful tandem partnerships.

5.2.2 TaLL challenges and strategies to overcome them

The first challenge, which is vital to the success of future programs, is to consider how to maintain tandem partnerships. Only one dyad stayed together continuously even though students had 'bonding' time during the initial workshop. The others met on and off as time and schedules allowed. As participation was voluntary, the students were free to make all decisions regarding participation. This disrupted the collection of audio recordings at times, which was the primary source of data. Solutions that proved effective for Learners A and B were setting achievable goals each week, actively preparing for follow-up sessions, and supporting their partner with their learning endeavours. A second challenge that students noted at the end of the program was that it was sometimes difficult to adjust language to suit a general audience when their oral presentations and written proposals were done mostly for their lab professors or specialist conferences. One solution the researchers considered was to pair lower proficiency students in similar fields at the start of a program. During the program, it was found that students tended to be able to converse more naturally and fluently with others in similar fields as they had deeper content knowledge and a wider range of lexis connected to similar research areas. More proficient learners were able to adapt with ease to an interdisciplinary situation. As such, the researchers will have to reconsider these aspects of the program design.

5.3 Post-TaLL survey results

In the final phase of iLearn, students were asked to once again complete the online survey that they had done in the pre-TaLL phase (Tab. 2). The purpose was to better understand student perceptions of the program in order to prepare for the next implementation. Tab. 3 shows the combined results of the survey.

Self-evaluation	Pre-tandem			Post-tandem		
	Yes	Just fine	No	Yes	Just fine	No
1. I understand the conventions of speaking in an academic context		33%	67%	93%	7%	
2. I can express my ideas clearly		40%	60%	60%	40%	
3. I can use appropriate vocabulary when discussing my research		33%	67%	20%	80%	
4. I can plan and present a poster in my subject area		47%	53%	93%	7%	
5. I can speak to a general audience using only notes or my poster as a guide		47%	53%	60%	40%	
6. I can communicate with cultural sensitivity and awareness		71%	29%	67%	33%	
7. Overall, I feel confident that in the future, I can give a poster presentation		33%	67%	100%		

(*n=25*)

Tab. 3: Comparison of Pre- and Post-TaLL survey results

Three salient points gleaned from the survey were:

1. Significant gains were documented in all areas as students became more familiar with the conventions of research presentations (especially, research organization, poster design, tone, and delivery).

2. Students' level of confidence about presenting in a real-life context in the future as well as interacting with others from a different culture was also considerably higher after 10 weeks of SciTech communication.

3. The ability for students to use appropriate lexis for general and specific audiences, although better, remained a challenge.

At the end of the program, an additional question was asked: What did you gain from your participation in the program? The two areas which students highlighted were:

1. An awareness of weaknesses in specific areas (such as English communication skill; ensuring accuracy in research content; lack of confidence and feelings of anxiety before giving a presentation).

2. Practical tips that they could use in a real-life research scenario (such as designing an eye-catching poster; enjoying the research experience; using presentation skills learned during the project in their labs; responding to research questions; having the opportunity to present research to people in different fields and countries; learning different points of view from international students; and considering collaborative projects with students in a different field of study).

6. Conclusion

The researchers implemented an eTandem program for research students as a result of spending many "off-the-clock" hours supporting them with submitting research proposals, writing abstracts, and preparing for conference

presentations. Without specific courses in the curriculum to meet this need, students were dependent on lab professors for guidance. For English presentation skills, it was not always easy for some Japanese professors to give adequate support due, at times, to language or time constraints. The TaLL proposal was, at first, met with scepticism, as it was thought that there would not be many participants, especially as it was launched during the summer vacation. However, as the enrolment numbers climbed, the researchers felt confident that the project would be successful. Post-tandem results showed that although there were challenges that needed to be overcome, the successes were significant enough to widen the scope of the project to a collaborative effort with another university. Student gains were evident in several areas over the 10 weeks, but it was also carefully noted that any increase in confidence and linguistic skills was subject to significant individual variability and came as a result of multiple efforts over the period rather than through the TaLL experience specifically.

eTandem is not without its set-backs and future programs will require a rethinking of tandem partnerships as well as other logistical matters; however, the results of this short study indicate that TaLL can contribute to confidence and enjoyment in SciTech language exchange, an awareness of the need to ensure accuracy when reporting research, an increase in intercultural awareness and most of all, the consideration of extending research networks not only to members of the immediate research community, but to labs within other faculties and even beyond the university walls.

REFERENCES

Batardière, M. T. & Jeanneau, C. (2020). Towards developing tandem learning in formal language education [Formaliser les dispositifs d'apprentissage en tandem dans l'enseignement des langues]. *Recherche et pratiques pédagogiques en langues de spécialité. [Research and Teaching Languages for Specific Purposes], 39(1)*.

Beckett, G. H. & Slater, T. (2005). The project framework: A tool for language, content, and skills integration. *ELT Journal, 59(2)*, 108-116.

Brammerts, H. (1996). Tandem language learning via the Internet and the international e-Mail tandem network. In D. Little & H. Brammerts (eds.), *A guide to language learning in tandem via the Internet* (pp. 9-22). Centre for Language and Communication Studies.

Brammerts, H. (2003). Autonomous language learning in tandem: The development of a concept. In L. Lewis & L. Walker (eds.), *Autonomous Language Learning in Tandem* (pp. 27-36). Sheffield: Academic Electronic Publications.

Denzin, N. K. & Lincoln, Y. S. (2011). *The SAGE handbook of qualitative research*. Thousand Oaks: Sage.

Dodd, C. (2001). Working in tandem: An Anglo-French project. In M. Byram, A. Nichols & D. Stevens (eds.), *Developing intercultural competence in practice* (pp. 162-175). Clevedon, UK: Multilingual Matters.

Elliott-Gower, S. & Hill, K.W. (2015). *The Soliya Connect Program: Two institutions' experience with virtual intercultural communication*. Gower Georgia College.

Ellis, R. & Sheen, Y. (2006). Reexamining the role of recasts in second language acquisition. *Studies in Second Language Acquisition, 28(4)*, 575-600.

Fujiwara, Y. (2018). The role of grammar instruction in Japanese EFL context: Towards communicative language teaching. *JAS4QoL, 4(4)*, 1-11.

Guth, S. & Helm, F. (2012). Teaching culture through CALL. In A. Arnold & L. Ducate (eds.), *Present and future promises of CALL: From theory and research to new directions in language teaching.* San Marcos, TX: CALICO

Hastings, M. G., Kontak, R., Holloway, T., Marin-Spiotta, E., Steiner, A. L., Wiedinmyer, C., Adams, A. S., de Boer, A. M., Staudt, A. C. & Fiore, A. M. (2010). Networking skills as a career development practice: Lessons from the Earth Science Women's Network (ESWN). *American Geophysical Union*, Fall Meeting 2010, abstract id. ED13A-0599.

Leone, P. & Telles, J. A. (2016). The teletandem network. In R. O'Dowd & T. Lewis (eds.), *Online intercultural exchange: Policy, pedagogy, practice* (pp. 241-247). New York: Routledge Taylor & Francis Group.

Little, D. (1991). *Learner Autonomy 1: Definitions, issues and problems.* Dublin: Authentik.

McCarthy, T. M. & Armstrong, M. I. (2019). Developing an informal tandem learning scheme for young researchers and academics. *The Asian Conference on Education 2019: Official Conference Proceedings*. https://papers.iafor.org/submission54082/

Menezes De Oliveira E Paiva, V. L. (2011). Identity, motivation and autonomy in second language acquisition from the perspective of complex adaptive systems. In G. Murray, X. (A.) Gao & T. Lamb (eds.), *Identity, motivation and autonomy in language learning* (pp. 57-72). Bristol: Multilingual Matters

MEXT (1997). *White Paper: Japanese government policies in education, science, sports and culture 1997*. Scientific Research Chapter 2 Section 3.1. https://www.mext.go.jp/b_menu/hakusho/html/hpae199701/hpae199701_2_027.html

Okdie, B. M., Guadagno, R. E., Bernieri, F. J., Geers, A. L. & Mclarney-Vesotski, A. R. (2011). Getting to know you: Face-to-face versus online interactions. *Computers in Human Behavior, 27*, 153-159.

Oliveira, L. M., Bonatelli, M. L. & Pinto, T. C. (2019). *DivulgaMicro*: A Brazilian initiative to empower early-career scientists with science communication skills. *Journal of Microbiology & Biology Education 20(1)*.

O'Rourke, B. (2007). Models of telecollaboration (1): eTandem. In R. O'Dowd (ed.), *Online intercultural exchange: An introduction for foreign language teachers* (pp. 41-61). Bristol, UK: Multilingual Matters.

Sasaki, A. & Takeuchi, O. (2011). EFL students' metalinguistic awareness in e-mail tandem. In M. Levy, F. Blin, C. B. Siskin, & O. Takeuchi (eds.), *WorldCALL: International perspectives on computer-assisted language learning* (pp. 55-69). New York, NY: Routledge.

Scalice, D., Dolci, W., Brochu, L., Merriman, T., Davis, H., Billings, L. & Voytek, M. A. (2019). FameLab USA: Improving science communication skills for early career scientists. *Astrobiology 19(4)*. doi.org/10.1089/ast.2017.1809

Schwienhorst, K. (2003). Neither here nor there? Learner autonomy and intercultural factors in CALL environments. In D. Palfreyman & R. C. Smith (eds.), *Learner autonomy across cultures: Language education perspectives* (pp. 164-180). Basingstoke, UK: Palgrave Macmillan.

Schwienhorst, K. (2010). Learner autonomy and tandem learning: Putting principles into practice in synchronous and asynchronous telecomunications environments. *Computer Assisted Language Learning 16(5)*, 427-443.

Stickler, U. & Emke, M. (2011). LITERALIA: Towards developing intercultural maturity online. *Language Learning & Technology, 15(1),* 147-168.

Tardieu, C. & Horgues, C. (2019). *Redefining tandem language and culture learning in higher education*. New York: Routledge.

Tian, J. & Wang, Y. (2010). Taking language learning outside the classroom: Learners' perspectives of eTandem learning via Skype. *Innovation in Language Learning and Teaching, 4(3)*, 181-197.

Unicollaboration (2020). Sample projects. https://www.unicollaboration.org/index.php/sample-projects/

Urquhart, C. (2013). *Grounded theory for qualitative research: A practical guide.* London: Sage Publishing.

Vassallo, M. L. & Telles, J. A. (2006). Foreign language learning in-tandem. Part I: A critical review of its theoretical and practical principles. *The ESPecialist, São Paulo, 27(1)*, 83-118.

Wang, J., Power, C., Kahler, C., Lyras, D., Young, P., Iredell, J. & Robins-Browne, R. (2018). Communication ambassadors–an Australian social media initiative to develop communication skills in early career scientists. *Journal of Microbiology and Biology Education 19(1)*.

Woodin, J. (2001). Tandem learning as an intercultural activity. In M. Byram & D. Stevens (eds.), *Developing intercultural competence in practice* (pp. 189-202). Bristol, UK: Multilingual Matters.

Woodin, J. (2003). Encouraging intercultural competence in tandem learning. In T. Lewis & L. Walker (eds.), *Autonomous language learning in tandem* (pp. 71-78). Sheffield, UK: Academy

Appendix

Coding descriptors

Design	Clear articulation of research problem, purpose or focus, including appropriate-sized text and bold headings, as well as eye-catching visuals (e.g., photos, figures or tables)
Content	Having an appropriate content level for a scientific presentation, including critical evaluation of specific aspects of scientific content: research purpose, data, methodology, results, conclusion, and research questions.
Delivery	Evaluation of speech rate, time-management, pragmatics, and register.
Organizational Structure	Well-structured, detailed and logical progression of research ideas: Introduction, Method, Results, Implications, and References.
Lexis	Use of appropriate and precise vocabulary for a specific or general audience.