

# Intelligent CALL, granular systems and learner data

*short papers from*  
**EUROCALL 2022**

**Edited by Birna Arnbjörnsdóttir, Branislav Bédi,  
Linda Bradley, Kolbrún Friðriksdóttir,  
Hólmfríður Garðarsdóttir, Sylvie Thouésny,  
and Matthew James Whelpton**

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Published by Research-publishing.net, a not-for-profit association  
Contact: [info@research-publishing.net](mailto:info@research-publishing.net)

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**Intelligent CALL, granular systems and learner data: short papers from EUROCALL 2022**  
Edited by Birna Arnbjörnsdóttir, Branislav Bédi, Linda Bradley, Kolbrún Friðriksdóttir, Hólmfríður Garðarsdóttir, Sylvie Thoučsny, and Matthew James Whelpton

**Publication date: 2022/12/12**

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Cover photo by © 2022 Kristinn Ingvarsson (photo is taken inside Veröld – House of Vigdís)  
Cover layout by © 2022 Raphaël Savina ([raphael@savina.net](mailto:raphael@savina.net))

ISBN13: 978-2-38372-015-7 (PDF, colour)

British Library Cataloguing-in-Publication Data.  
A cataloguing record for this book is available from the British Library.

**Legal deposit, France:** Bibliothèque Nationale de France - Dépôt légal: décembre 2022.



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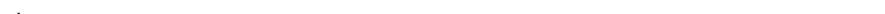


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## Preface

Birna Arnbjörnsdóttir<sup>1</sup>, Branislav Bédi<sup>2</sup>, Kolbrún Friðriksdóttir<sup>3</sup>,  
Hólmfríður Garðarsdóttir<sup>4</sup>, and Matthew James Whelpton<sup>5</sup>

The 2022 EUROCALL conference was held in Reykjavik on 17-19 August 2022 as a fully online event hosted by the Vigdís Finnbogadóttir Institute for Foreign Languages, the University of Iceland, and the Árni Magnússon Institute for Icelandic Studies. It was preceded by an online workshop Digital Literacies in a Data-Driven World held on 16 August 2022 hosted by Nicky Hockly, director of pedagogy of The Consultants-E, an award-winning online training and development organisation.

The conference theme was *Intelligent CALL, granular systems and learner data*.

This theme reflects the newest developments in the field of technology for language learning. Subfields such as natural language processing and machine learning not only enable smoother spoken and written communication between human learners and computers, but also offer ways in which language learning can be tailored to the needs of individual learners. By adding components of automatic speech recognition, text-to-speech systems, automatic feedback mechanisms, and tracking systems monitoring learners' progress and their use of tools, applications are becoming better targeted. All of this is used to optimise the learning experience of individual learners.

The optimisation process, which is based on many different types of information about learners' progress, is called granulation. Using granular systems, i.e. systems

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**How to cite this article:** Arnbjörnsdóttir, B., Bédi, B., Friðriksdóttir, K., Garðarsdóttir, H., & Whelpton, M. J. (2022). Preface. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. xv-xix). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1424>



equipped with mechanisms for data collection about users' learning behaviour, is not only popular in assessment programmes but also in many language learning systems with educational purposes. From a microscopic level, granularity is regarded as all the different data gathered from one user. When analysing data from several different users of the same language learning programme, one can achieve a macroscopic granular view. This type of granular view allows the presentation of the learning behaviour of many different users in a more concise way. For instance, a pattern of co-occurring events on a longitudinal level can be detected. This means that one can learn about different points in time when individual users performed similar actions.

Although there is still a long way to go before artificial intelligence, which is based on the combination of different technologies for language learning and user data, it will become an integral part of Computer-Assisted Language Learning (CALL), we can nonetheless say that a new technological stage of intelligent CALL has already commenced, and that this year's conference could officially introduce it to the EUROCALL community.

The 2022 EUROCALL conference engaged just under 280 speakers from 30 different countries. Based on last year's experience from our colleagues in Paris, we also made use this year of the Whova® platform for communication and sharing information, uploading pre-recorded video presentations to sustain the EUROCALL community, allowing for exploration of content prior to the conference, publishing the official conference programme, and for live streaming events in different virtual strands:

- four keynote sessions;
- one invited talk;
- 11 group sessions in which three presenters gave a five-minute lightning talk with a total of 171 presentations;
- six European project meetings with individual sessions in which each presenter gave a twenty-minute presentation;
- five symposia in which three to four speakers gave short presentations in each symposium, totalling 21 presentations;
- eight poster presentations in the artefact centre;

- six special interest group meetings; and
- an editors' workshop.

The four outstanding keynote presentations were given by the following speakers.

**Kirsten Campbell-Howes**, chief learning officer of Busuu, delivered a talk titled 'Busuu: practical insights from learner data'. In her talk, she showed selected data of over 120 million learners, who have registered to learn a language on Busuu since 2008. Today, the platform generates billions of data points between them. In this presentation, Kirsten outlined some of the practical insights from this data and how these billions of data points have impacted Busuu's learning design and methodology. She also described the Busuu learner population and some of the challenges associated with collecting and utilising such large datasets.

**Kolbrún Friðriksdóttir**, adjunct lecturer in Icelandic as a second language at the University of Iceland, delivered a talk entitled 'Framework for ways to promote engagement in LMOOCs'. In her presentation, she argued that completion rates in Massive Open Online Courses (MOOCs) are generally low (Jordan, 2015), which has called into question the quality of their learning materials and instruction, as well as learners' goals for participation (Reich, 2014). The need for new and engaging forms of pedagogy and design strategies in order to improve retention in MOOCs has thus been proposed in this context (Colpaert, 2014; Sokolik, 2014). Furthermore, the necessity of tutor support and guidance for the autonomous learner has been underlined (Ross et al., 2014). The main research objective in her research was to identify crucial factors that impact student retention and effective engagement strategies in LMOOCs. These factors are considered within the context of *Icelandic Online*, a CALL programme developed at the University of Iceland. She presented her rigorous study (Friðriksdóttir, 2018, 2021a, 2021b) where she employed mixed methods and used three sources of evidence: tracking data (n=43,500), survey data (n=400), and qualitative data (174 informants). Based on large-scale, long-term tracking data on a large population, the study at first provided empirical evidence and a detailed picture of engagement patterns and attrition across equivalent courses in different modes of delivery. Second, the follow-up survey in her study contributed to empirical evidence on language MOOC learners' experiences of content-related, tutor-related, and other individual factors for engagement, and their influence on retention. Finally, she presented her qualitative data study, which offers insight into what individual learners, both completers and non-

completers, see as critical factors of retention or attrition in language MOOCS. Based on the findings of her research, she proposed a possible new framework for ways to promote engagement in language MOOCs. This framework includes several content-related strategies and tutor involvement.

**Nicky Hockly**, director of pedagogy of The Consultants-E, delivered a talk entitled ‘Intelligent CALL: the good, the bad and the ugly’. Her keynote took a bird’s eye view of intelligent CALL, exploring what it is, what it can do for language teachers, and what ramifications (both good and bad) it may have for educational institutions, teachers, and learners. She also took a critical look at where intelligent CALL is taking us, and how to ensure we get there in one piece.

**Hannes Högni Vilhjálmsson**, professor of computer science at Reykjavik University, delivered a talk titled ‘More than talk: non-verbal behaviour and the management of co-presence in virtual language training’. In his talk, he argued that the typical focus of language learning materials, both traditional and interactive, was the mastery of spoken utterances and written sentences. While these form an essential core in communication, they occur within a social context. In the case of spoken language, he argued that the social context generally includes co-presence, where the bodies of those communicating occupy a common space, often defined by a specific social event such as a work party at a pub or a class at school. He mentioned that before any words are uttered, participation in conversation is almost always first negotiated non-verbally, through the use of position, orientation, gaze, posture, and gesture. While this negotiation does not rely on knowledge of a specific spoken language, the behaviour and its interpretation is often culturally dependent. He argues that it is therefore important that language learning considers the skills necessary to successfully manage and coordinate these situations non-verbally, in order to fully realise the potential of spoken proficiency. This talk reviewed some of the essential skills and non-verbal behaviour for managing co-presence and provided examples from innovative virtual social and language training applications.

Our gratitude goes to all the participants, keynote speakers, invited speakers, live-session presenters, poster presenters, members of special interest groups, and workshop contributors. We are also very grateful to the rector of the University of Iceland for awarding an institutional sponsorship.

Our extended gratitude goes to the EUROCALL executive committee, the scientific committee, and the local organising team including our colleagues and student helpers.

This volume includes 66 short papers by some of the EUROCALL 2022 presenters and it offers a combination of research studies and theoretical papers reflecting the ten subthemes of the conference. The articles are ordered alphabetically. We would like to thank both the authors and the reviewers for their time and effort in ensuring that high scientific standards have been met in delivering this volume. Finally, we would like to warmly thank Sylvie Thouésny and Linda Bradley for their immense support in the publication process and for delivering an excellent service in meeting the highest publication standards.

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# Easy as ABC: using LARA to build multimedia alphabet books

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**Abstract.** We present a study in which multimedia alphabet books were constructed for ten languages using the Learning And Reading Assistant (LARA) platform. We describe the alphabet books we built, the different design features they instantiate, and an initial evaluation using an anonymous online questionnaire. Links are provided to the books themselves, which are freely available on the web.

**Keywords:** CALL, multimodality, reading, alphabets, sign language, open source.

## 1. Introduction

In order to get an initial foothold in a new language, the learner needs a basic understanding of three things: the sounds, the writing system, and the vocabulary. Although these may seem like trivial requirements, experience shows that they often pose serious and even insuperable obstacles. Computer Assisted Language Learning (CALL) methods that can address these issues are potentially very useful.

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**How to cite this article:** Akhlaghi-Baghojari, E., Bédi, B., Chua, C., Horváthová, I., Ivanova, N., Maizonniaux, C., Mykhats, M., Ní Chiaráin, N., Rayner, M., Orian Weiss, C., & Zviel-Girshin, R. (2022). Easy as ABC: using LARA to build multimedia alphabet books. In B. Arnþjórsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 1-6). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1425>

Suitably reconfigured for the internet age, we think there is much to recommend the humble alphabet book: alphabet books look simple and unthreatening, but can impart sophisticated linguistic information without scaring naïve users. A quick search of the web finds many online alphabet books. There is, however, little systematic discussion of how they should be structured, perhaps because of an enduring prejudice that they are too trivial to be taken seriously.

In this paper, we describe recent work carried out within the framework of LARA (Bédi et al., 2020, <https://www.unige.ch/callector/lara/>), an open source tool for creating multimedia texts, where we have used the LARA framework to create examples of multimodal online alphabet books for ten languages. The work has been carried out by several groups within the loosely-knit LARA consortium, using a variety of techniques. These include presentation of phoneme inventories through phonetic concordances or contrastive pairs; inclusion of pictures where touching a part of the picture plays audio; phonetically annotated words, where the student can spell out the word in audio form by clicking through it; and linking to online videos.

## 2. Ten LARA alphabet books

Table 1. Features of the alphabet books used in the study, with links to books

Language and link	Audio	Images	Clickable images	Video	Example sentences	Phonetic text	Contrasting pairs	Letter variants	Grammar
Arabic	✓	✓				✓		✓	
English	✓	✓	✓		✓	✓			✓
Farsi	✓	✓				✓		✓	
French	✓	✓	✓		✓	✓			✓
Hebrew	✓	✓		✓		✓		✓	
Icelandic	✓	✓							✓
Icelandic Sign language		✓	✓	✓					
Irish	✓	✓			✓		✓		✓
Slovak	✓	✓	✓						
Ukrainian	✓								

We built multimedia LARA alphabet books for Arabic, English, Farsi, French, Hebrew, Icelandic, Icelandic Sign Language, Irish, Slovak, and Ukrainian. There was, intentionally, no overall coordination; people were asked to develop alphabet books as they saw fit. In practice, people watched each other, and the later books often adapted features from the earlier ones. [Table 1](#) summarises each alphabet book in terms of the following strategies.

**Audio.** Clicking on a word plays audio. This was used in all languages except, for obvious reasons, Icelandic Sign Language.

**Images.** There are pictures of objects illustrating letters. This was used for all languages except Ukrainian, a nonstandard alphabet book essentially designed as a minimalist poem making a political statement.

**Clickable images.** The LARA platform supports the definition of images in specified areas, defined using a graphical drawing tool, which are associated with words ([Bédi et al., 2022](#)); hovering highlights the area, and clicking plays audio for the word or shows other information. This feature was used in different ways. In English and French, which were built around images taken from Saint-Exupéry's *Le petit prince*, the point was to define the relevant part of the image. In Icelandic Sign Language, it was used to convert a poster illustrating handshapes (handshapes are the sign language equivalent of phonemes) into multimedia LARA form. In the Slovak book, which was designed for small children, it provided the basis for a game where each image hid the shape of the letter it illustrated.

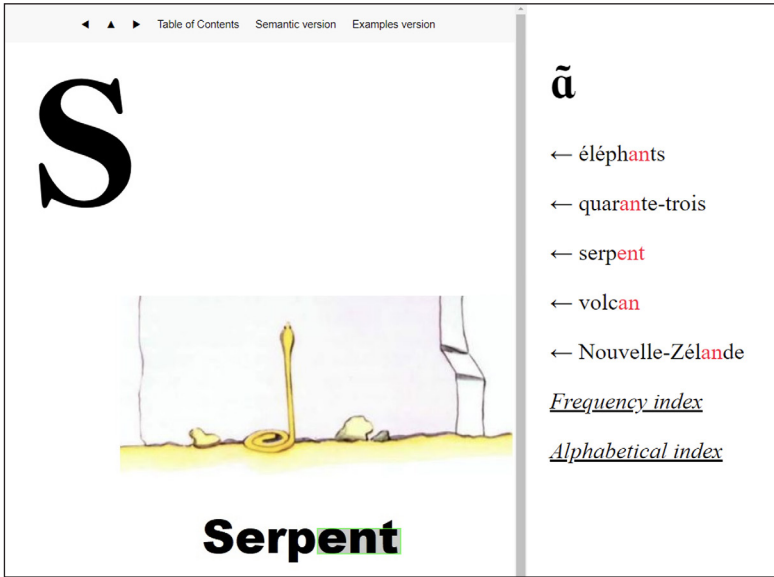
**Video.** Video was used in Icelandic Sign Language to show sign language clips, and for entertainment value in Hebrew.

**Examples.** Four books included example sentences for letters and words.

**Phonetic text.** Another feature recently included in the LARA platform is 'phonetic texts' ([Bédi et al., 2022](#)), where words are automatically divided into letter groups associated with phonetic values. The user clicks on letter groups rather than words. Clicking plays audio and also shows a phonetic concordance containing other examples where the same phonetic value has occurred. This feature was used for Arabic, English, Farsi, French, and Hebrew. For English and French, the motivation was to help learners understand the notoriously opaque correspondences between letters and sounds in these two languages. For Arabic, Farsi, and Hebrew, the point was to help learners link together the often quite different variant forms of letters. [Figure 1](#) presents an illustrative screenshot from the French book.



Figure 1. Example of phonetic LARA text (French book): hovering over the letters 'ent' on the left highlights them, showing that they are a single phonetic unit; clicking shows a list of examples on the right



**Contrasting pairs.** Letters can be presented together with closely related ones. This was used for Irish, where one of the key issues is the palatalisation/velarisation contrast (Bédi et al., 2022).

**Letter variants.** As noted above, Arabic and Hebrew contain variant forms of letters, the form used depending on the position the letter takes in the word.

**Grammar information.** For English, French, Icelandic, and Irish, clicking on a word accesses grammatical information. For all four, the base form of the word is shown on the right-hand side. For Icelandic, the learner can also see a table of inflected forms linked from an online resource.

### 3. Preliminary evaluation with questionnaire

We posted a page<sup>12</sup> with links to the ten alphabet books and a link to an anonymous online questionnaire with 11 questions, and circulated it to friends, colleagues, and

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12. [https://www.issco.unige.ch/en/research/projects/callector/alphabet\\_books.html](https://www.issco.unige.ch/en/research/projects/callector/alphabet_books.html)

social media, asking them to try at least one book and then answer the questionnaire. We received responses from 41 subjects (30 F, nine M, two O). Of these, 24 said they were evaluating the books from the point of view of a learner, 11 from that of a teacher, and six from both, while 23 subjects identified as language teachers, mostly (20) of English.

The distribution of alphabet books reviewed was uneven, with 22 subjects reviewing English, 17 Slovak, 9 Icelandic, six Arabic and French, five Ukrainian, four Icelandic Sign Language, two Irish, and one Hebrew (16 subjects reviewed more than one book). Fortunately, English was one of the most interesting books in terms of including many features. On the satisfaction question (“In general, what was your reaction to the alphabet book you tried”), 25 responses (61%) were positive, with three choosing “Excellent. I will come back and use it again” and 24 “Interesting, I spent some time looking at it”; nine (23%) were weakly positive (“Kind of fun, I flipped through it a bit”). The remaining 16% were negative.

On the multiple choice question “Which features do you think should be included in an online alphabet book for beginner learners”, the most popular answer (33; 81%) was “audio recordings of words”. Other common answers were “Examples of words in a sentence” (23; 56%), “Written word for each letter”, and “Examples showing different forms of letters” (both 22; 54%), “Written phonetic transcripts of words” (20; 49%), “Written phonetic transcripts of letters” (18; 44%), “A button allowing learners to record their own voice” (16; 39%), and “Links to grammar information” (15; 37%).

In response to the question “Based on the examples you have reviewed, would you be interested in using the LARA platform to construct your own alphabet book”, 15 (37%) answered “Yes”, with most of the rest (21; 51%) answering “Don’t know/haven’t thought about it”.

#### **4. Conclusions and further directions**

Given the fairly small sample size, our conclusions can only be tentative. Our impression is that both learners and teachers viewed the online alphabet books quite positively. Unsurprisingly, the most useful feature was perceived as being the ability to listen to audio, which is standard. It was also unsurprising to see that the majority of the subjects approved of other standard features like words exemplifying letters, images for the words, and example sentences.

Less obviously, we were interested to find that about half the subjects appeared to like the novel ‘phonetic text’ functionality, which was used in the Arabic, English, Farsi, French, and Hebrew books. More detailed investigation of user reactions to this feature would be a natural way to continue the study.

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# Using augmented reality for collaborative multimodal storytelling

Steven Asquith<sup>1</sup> and Erin Frazier<sup>2</sup>

**Abstract.** New technologies often influence the ways in which one shares linguistic experiences. One such technology, Augmented Reality (AR), may initiate concepts used in language learning through digital storytelling. This paper describes an exploratory research project based on Choose Your Own Adventure (CYOA) AR digital storytelling which investigated how Collaborative Learning (CL) and AR can be used to enhance language learning. Different AR activities were evaluated, culminating in an AR digital storytelling project. Analyses of qualitative data collected after each activity provided insights into important considerations when utilizing AR in the classroom. The findings suggest that learners found considerable value in AR, but also highlighted challenges in its application. CL was key to the success of this project.

**Keywords:** augmented reality, collaborative learning, multimodal storytelling.

## 1. Introduction and context

AR can improve students' analytical thinking and creativity by applying the technologies affordances, while collaborating to design and play interactive activities. This paper describes a CYOA digital storytelling project. It builds on knowledge of AR technology developed in class-based projects such as AR vocabulary games, AR travel fair poster presentations, and AR scavenger hunts. The study was conducted with Japanese freshmen English majors as part of a process-oriented curriculum based on the multiliteracies approach (New London Group, 1996) with the goal of developing a sophisticated communicative competence. Interaction and peer-to-peer collaboration are key elements of curriculum based

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**How to cite this article:** Asquith, S., & Frazier, E. (2022). Using augmented reality for collaborative multimodal storytelling. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 7-11). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1426>

group work and this project intended to cultivate students' creative multimodal capacities.

## 2. Theoretical grounding

CL was used to both analyze and create new media forms based on the CYOA format. Implicit in the notion of collaboration is the idea of reciprocity and helping other group members to achieve a stated goal, or solve a problem, through cooperation rather than competition (Laal & Laal, 2012). As such, important life skills such as emotional intelligence, conflict resolution, teamwork, and leadership, as well as locating, presenting, and synthesizing information become part of the learning process. Also, such CL allows students to participate according to their relative attributes in an equitable division of labor. This characteristic of CL allowed students to successfully complete the CYOA project which required diverse skills and knowledge.

AR immerses language learners in experiences by merging real world with virtual objects and images (Yang & Liao, 2014). Statti and Torres (2018) suggest positive learning outcomes for those who take part in AR experiential learning. As AR adds a digital layer to reality it provides an immersive experience which augments learning. This merit compliments the CYOA storytelling format which places the reader in the first person as an active agent making decisions in the narrative process. By utilizing AR these decisions can be augmented into the real world and students can create media which immerses the 'reader' into the narrative experience. AR has been shown to have positive effects in a range of educational contexts, including discovery-based learning, objects modeling, AR books, skills training, AR gaming (Yuen, Yaoyuneyong, & Johnson, 2011), social constructivism, and individualized fostering of knowledge (Zhang, Wang, & Wu, 2020).

Creatively designing CYOA stories, therefore, seems to take advantage of CL and AR's specific affordances. By requiring students to use AR as a consumer of a narrative, and to be active and creative designers, we required students to use higher-order thinking skills in their second languages.

## 3. Project description

The goal of this project was to have students think critically about the advantages of different textual types – written and visual, video, and AR – for storytelling,

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thus improving their understanding of multimodal forms of expression. To achieve this, students collaborated to create effective AR narratives. The project was implemented in three stages: (1) written, (2) video, and (3) AR. Students created written CYOA stories and played YouTube-based CYOA videos before working on the AR group project. This allowed students to compare the media types and scaffold their knowledge as they progressed.

Participants were first year English majors in a Japanese university (n=63) and the project was conducted in their second language, English. Evaluation was primarily based on students' creation of the CYOA digital artifacts, while playing the other students' stories was a secondary goal. After the project was completed, participants wrote a reflection considering the benefits and limitations of each modality and what they learned from the process.

Students designed an AR CYOA story in groups of four using their second languages. This was a complex task requiring learners to create stories in multiple textual dimensions. Students considered the basic story narrative, choices and structure, how to tell it effectively in short video sections, and how to embed the story into the physical world so that the player's physical location became part of the narrative. After each video, players made a decision which would direct them to the next location. Once found, this location revealed an AR video layer showing the next part of the story. Based on this structure, students collaboratively designed their narratives. Once completed, these were shared with the rest of the class to play the original AR CYOA stories.

#### **4. Outcomes**

The resulting CYOA stories included a detective murder mystery which directed the player to the scene of the crime in the physical world to look for clues, as well as a horror story which used enclosed physical spaces such as elevators to build tension. This illustrates that students thought carefully about designing the stories based on the strengths of AR and the use of both physical and digital environments. Another production consisted of an interactive, retro video game in which players had to find and defeat a monster that made effective use of sound effects. This highlighted the students' consideration of AR modalities including genre and the first person camera viewpoint to immerse players within the narratives. Part of the appeal of AR and this project was the novelty, and students engaged with the challenge of creating content in an innovative medium. Overall, the CL aspect of this project worked especially well, as students had to

function effectively as teams based on their individual strengths to complete the task in their second languages.

Students stated that AR was the most interesting way to tell a CYOA story. They especially liked the aspect of moving through the physical environment and collaborating with classmates to find targets and make in-game choices. They also felt that collaboration during the design and playing of the AR stories was enjoyable and beneficial to their English skills. The main constraints were frustrations with the AR relating to errors and not being able to go back and rewind video clips. The following quotes summarize the class's general opinions on the CYOA AR project.

“We can enjoy like a real adventure and feel reality. Otherwise, it's little bit hard to make because sometimes AR has a system error. But AR activity is so fresh and I could enjoy it because it is my first time to make own AR videos”.

“I actually tried AR, and it was so fun. Because it is like a real game and I can enter the game world, so it is exciting”.

## **5. Limitations and future directions**

Improvements to this project would relate to enhancing the students' awareness of the outcomes, specifically relating to CL life skills and metacognitive awareness. For instance, this might involve awareness-raising through pre- and post-task check sheets showing the CL skills (i.e. leadership, negotiation, and emotional intelligence, etc). As a language learning tool, this might be conducted in groups with students brainstorming language and phrases useful for each skill type. Also, a post-task guided group, and whole class discussion targeting effective multimodal communication skills would provide an excellent addition to this project. Because the task was relatively complex requiring different soft skills, communication skills, and technical skills, outcomes should be explicitly stated so that students become metacognitively aware of the project's value.

## **6. Conclusion**

This qualitative investigation detailed a CYOA digital storytelling project using AR and CL with second language learners. This approach provided a powerful

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means for students to effectively learn soft skills in combination with multimodal and digital literacies. Although the technology is not perfect, students still found considerable value in creatively and collaboratively applying its affordances. If easy-to-use, reliable, and affordable AR apps become more readily available, such CL AR projects would be worthwhile additions to many pedagogical contexts.

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# “I found the fish in Pronunciation Quiz #3!” Examining the effect of a game-informed site on young learners’ L2 pronunciation

Mike Barcomb<sup>1</sup> and Walcir Cardoso<sup>2</sup>

**Abstract.** This paper examines the impact that a game-informed pronunciation site has on the acquisition of English /r/-/l/. Twenty-three Japanese-speaking English learners completed a series of pronunciation activities directed at improving their phonological awareness and oral production of the /r/-/l/ contrast. The activities included game-informed tasks that rewarded learners with points, badges, and scavenger hunt items. For control, eight students completed the same activities without game-informed affordances. The study followed a mixed-methods approach with a pre-, post-, and delayed post-test design. Qualitative results indicate that learners in the game-informed group developed metaphonological awareness and perceived the proposed learning environment positively. For production, the quantitative results indicate that participants in the game-informed group improved their pronunciation of /r/-/l/ items. Pedagogical implications for the use of game-informed environments for L2 pronunciation instruction are discussed.

**Keywords:** game-informed design, gamification, L2 pronunciation, metaphonological awareness.

## 1. Introduction

The use of game-informed pedagogical materials (gamification) offers cognitive, social, and emotional benefits in L2 learning (Reinhardt, 2019), making learning more enjoyable (e.g. via the inclusion of experience points) and potentially

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**How to cite this article:** Barcomb, M., & Cardoso, W. (2022). “I found the fish in Pronunciation Quiz #3!” Examining the effect of a game-informed site on young learners’ L2 pronunciation. In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 12-17). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1427>

enabling learners to become motivated by their efforts. Of interest to this study is that the affordances of game-informed CALL systems have shown promise in L2 pronunciation instruction. Following Reinhardt's (2019) call for game-informed systems to support autonomous learning and to target measurable outcomes, Barcomb and Cardoso (2020) developed a game-informed course management system that aided learners in the acquisition of L2 pronunciation. Young Japanese-speaking participants improved their production of /r/-/l/ and developed their metalinguistic awareness of the target segments. However, Barcomb and Cardoso's (2020) study was short (two weeks), and it did not include a comparable control group. The current study addresses these limitations.

To examine a game-informed pronunciation site designed to support autonomous L2 pronunciation practice (e.g. via instructional videos, listening quizzes, and pronunciation activities using Automated Speech Recognition – ASR), we focused on the acquisition of the English /r/-/l/ contrast, a feature not differentiated in perception or production by Japanese speakers. For control, eight students completed the activities in a course without game-informed elements. To this end, this mixed-method study addressed the following research question and sub-components: What effect does a game-informed course have on the acquisition of /r/-/l/ in terms of learners' (RQ1) metaphonological awareness, (RQ2) oral production (pronunciation), and (RQ3) perceptions of the proposed game-informed environment?

## 2. Method

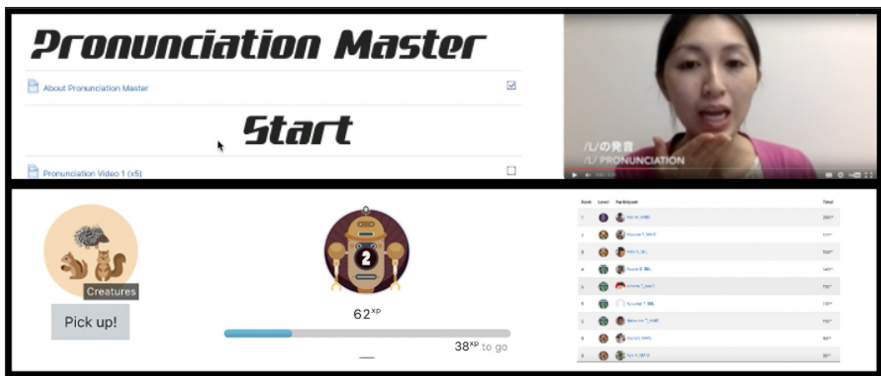
*Study Design and Sample.* Thirty-one young L2 Japanese learners (CEFR A-1) from an online school participated in the study, with 23 learners in the game-informed group (experiment group) and eight in the control group. All learners were accustomed to completing game-informed pronunciation activities as part of their homework; however, only the activities for the game-informed group included rewards. The proposed pedagogical intervention lasted six weeks. The control group had a different teacher, but the curriculum and lessons were otherwise identical.

*Procedure.* Adopting Celce-Murcia, Brinton, and Goodwin's (2010) communicative framework to L2 pronunciation instruction, the game-informed Moodle site was designed to raise awareness about the /r/-/l/ contrast before providing opportunities for listening discrimination and guided pronunciation practice. The activities included two instructional videos about

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/r/-/l/ pronunciation, four minimal-pair listening quizzes, six ASR pronunciation activities with immediate feedback, and an activity where learners drew what their mouth looked like when pronouncing the target features. The videos emphasized placing the tongue on the alveolar ridge to produce /l/ and lip rounding to produce /r/. Each activity instantly rewarded learners with five points, which were added to a leaderboard. Students were encouraged to repeat activities to gain points and find hidden items they could add to a digital stash. See [Figure 1](#) for a screenshot of an activity and the rewards.

Figure 1. Features of *Pronunciation Master* module

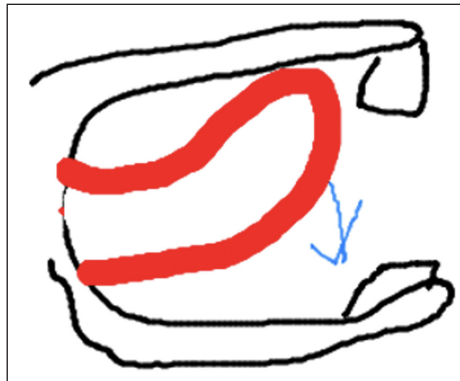


*Instruments, Data Collection, and Analysis.* A post-test questionnaire with open-ended responses aimed to understand if the proposed game-informed environment contributed to learners' metaphonological awareness (RQ1); e.g. *What do you know about the pronunciation of /r/ and /l/? Please explain.* In line with [Celce-Murcia et al. \(2010\)](#), metaphonological awareness was operationalized as being able to articulate the difference/s between the pronunciation of /r/ and /l/. A pre-test, immediate post-test at six weeks, and delayed post-test at ten weeks with controlled aural elicitation tasks were administered to measure the effect that the proposed game-informed activities had on the participants' production of /r/ and /l/ (RQ2). Participants would play a video of a teacher saying a word or statement before recording themselves repeating what they heard. The test included 32 /r/ and /l/ singletons that were evenly distributed to onset (e.g. *rice*) and coda position (e.g. *tar*). To understand learners' perceptions of the proposed learning environment (RQ3), two written questionnaire items asked learners what they perceived to be the strengths and weaknesses of the game-informed learning environment. The questionnaire and pronunciation test were available on *Moodle* as an assignment and quiz, respectively.

### 3. Results

*Metaphonological Awareness.* An analysis of the written questionnaire data indicates that, overall, participants developed metaphonological awareness; i.e. an ability to articulate their knowledge about the production of English /r/ and /l/. Twenty-one participants in the game-informed group were able to describe how to pronounce the target segments; e.g. *I remember about putting my tongue behind my front tooth for /l/ and not putting my tongue behind the teeth for the /r/ sound.* Awareness was also evident in the drawing activity, which was completed by all the participants in the game-informed group (see [Figure 2](#) for an example). Two students in the control group noted that they knew where to place their tongue to produce /l/, though none reported how to move their mouth to produce /r/.

Figure 2. Sample of student drawing

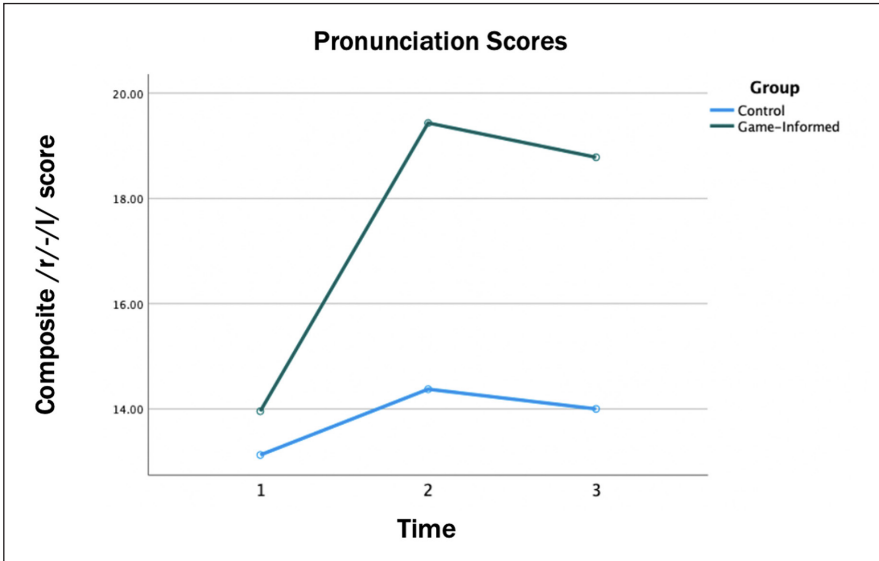


*Oral Production.* Results from a two-way mixed ANOVA revealed a statistically significant effect of time on pronunciation scores for the game-informed group,  $F(1.74, 38.25)=149.16, p<.001, \text{partial } \eta^2=.87$ . Post-hoc analyses with a Bonferroni adjustment were conducted, revealing that the pronunciation scores in the game-informed group were significantly different between the pre- and post-test ( $M=5.48, SE=.38, p<.001$ ), in addition to being significantly higher on the delayed post-test when compared to the pre-test ( $M=4.83, SE=.38, p<.001$ ). There was not a statistically significant difference between pronunciation scores on the post-test and delayed post-test ( $M=.65, SE=.27, p>.05$ ). No significant effects of time on the production of /r/ and /l/ scores were observed in the control group. [Table 1](#) reports the test scores between the pre-test, post-test, and delayed post-test while [Figure 3](#) provides a visual representation of pronunciation scores for each group.

Table 1. Pronunciation scores

	Pre-test		Post-test		Delayed Post-test	
	M	SD	M	SD	M	SD
Game-informed group	13.96	2.36	19.43	2.06	18.78	2.35
Control group	13.13	1.73	14.38	2.77	14.00	3.16

Figure 3. Composite oral production scores



*Users' Perceptions.* An analysis of the written questionnaire data indicates that, overall, participants in the game-informed group perceived the experience positively. Eighteen students enjoyed competition (e.g. *I like competing and collecting experience points*). Twenty-two students reported that the elements motivated them to review materials (e.g. *Stash items motivated me to study more because I went back to study to find the stash items*). These responses also shed light on why the pronunciation results may differ between the groups, as the experiment group completed an average of 17.13 activities while the control group completed an average of only 6.50 activities.

#### 4. Discussion and conclusions

This study provides evidence for the potential of game-informed pedagogy in L2 pronunciation instruction. While the game-informed group showed a statistically

significant improvement of /r/-/l/ production on the two post-tests, the control group did not show any improvements. This finding is likely due to the game-informed elements, which encouraged participants in the experimental group to use the materials repeatedly (almost three times more frequently than participants in the control group). These results also align with the predictions of Celce-Murcia et al.'s (2010) framework, as an instructional focus on metaphonological awareness and controlled practice resulted in production accuracy. These types of practices increase learners' ability to process the target feature in short-term memory (Celce-Murcia et al., 2010), subsequently transferring that knowledge to oral production, as observed in this study.

Due to working with students in a pre-existing online school, the sample size for this study was relatively small and may affect the generalizability of the findings. Despite this limitation, the participants were accustomed to using game-informed materials, thus reducing the novelty effect seen with game-informed materials. This study also embodied a praxis perspective to game-informed second language teaching and learning, which assumes that theory, research, and practice contribute equally to developing and testing resources in a shared gameful experience between teachers and students (Reinhardt, 2019). Future studies should examine the impact of game-informed pronunciation practice on the development of different phonological features of English (e.g. rhythm, stress) and implement more conversational aspects of pronunciation practice such as guided and communicative practice.

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# Using LARA to create annotated manuscripts and inscriptions for museums: an initial feasibility study

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**Abstract.** We argue that museums presenting exhibits of ancient texts may be able to benefit from accompanying them with annotated electronic versions. We present a short study using two sample annotated texts built using the Learning And Reading Assistant (LARA) platform for a fragment of an Old Norse manuscript and an inscription in Ancient Egyptian hieroglyphs respectively. The results of an online questionnaire suggested that people already interested in ancient languages would view the idea very positively.

**Keywords:** multimodality, museums, manuscripts, inscriptions.

## 1. Introduction

Most people interested in archaic languages have probably had the experience of standing in a museum, examining a manuscript, inscription, or tablet, and wondering what the signs written on them mean. Some exhibits may have a plaque next to the original source with some explanatory text. But even in the best case, when a full translation is provided, what is the connection between the

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**How to cite this article:** Bédi, B., Chiera, B., Chua, C., Eyjólfsson, B., Rayner, M., Orian Weiss, C., & Zviel-Girshin, R. (2022). Using LARA to create annotated manuscripts and inscriptions for museums: an initial feasibility study. In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 18-23). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1428>

signs, letters, and the claimed meaning? How much of the meaning is present in the translated text provided, and how much is guesswork? Here, we present an initial experiment, where we have used the open-source LARA (Bédi et al., 2020b – <https://www.unige.ch/callector/lara/>) to create a basic prototype of what a digitally enhanced museum exhibit of this kind might use to inform and educate their visitors. LARA supports creating multimedia resources with translations into various languages depending on the creator’s purpose. Specifically, we produced multimedia versions of two sample documents, an extract from an Old Norse manuscript and an inscription in Ancient Egyptian hieroglyphics. Each multimedia text is presented in two different views. The Old Norse text offers a ‘manuscript’ view and a ‘printed text’ view. The hieroglyphics text offers a ‘sign’ view, which displays information about the individual glyphs, and a ‘words’ view, which groups them into words and sentences. Hovering over a part of the text that is associated with an annotation outlines the symbol or image and shows a popup gloss; clicking plays audio and displays other information. In sections below, the methodology, evaluation of results, and comments will be discussed.

## 2. Two annotated texts in ancient languages

We present the two annotated texts used. Both can be accessed from a summary page<sup>8</sup> which also contains a link to the questionnaire described in the following section.

### 2.1. A fragment of an Old Norse manuscript

The first document (Figure 1) is directly available online<sup>9</sup> and consists of three verses taken from the traditional Old Norse epic *Völuspá* (The Seeress’s Prophecy), among other things famous as Tolkien’s favourite poem. The LARA document, illustrated in Figure 1, has been adapted from a full LARA version of *Völuspá* developed under a previous project (Bédi et al., 2020a). Most importantly, the manuscript view was added using the methods described in Bédi et al. (2022): as explained there, this involved using a graphical tool to draw the area in the image associated with each text word. Every verse includes audio and a parallel line-by-line translation. The user can hover over or click on words in either view. Hovering over a word in the manuscript view outlines it and shows a popup with a plain text

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8. [https://www.issco.unige.ch/en/research/projects/callector/manuscripts\\_and\\_inscriptions.html](https://www.issco.unige.ch/en/research/projects/callector/manuscripts_and_inscriptions.html)

9. [https://www.issco.unige.ch/en/research/projects/callector/v%C3%B6lusp%C3%A1\\_manuscript\\_v3vocabularypages\\_hyperlinked\\_text\\_html](https://www.issco.unige.ch/en/research/projects/callector/v%C3%B6lusp%C3%A1_manuscript_v3vocabularypages_hyperlinked_text_html)



transcription and a gloss translated into English. Clicking plays audio and shows other information.

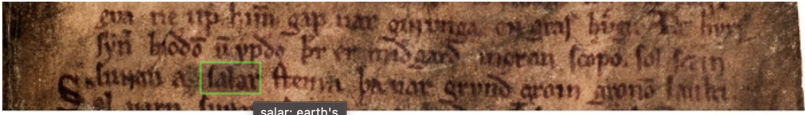
The overall intent is that the reader should both be able to *understand* the verses and also to have some chance of *appreciating* them as poetry. It is obviously difficult to quantify the second goal, but our own experiences and informal exchanges with other people who have looked at the material lead us to believe that the dramatic quality of the audio recording is key. An earlier version with a lower-quality voice was unconvincing: the one posted, which was recorded by a professional-quality voice talent, has frequently been described as ‘beautiful’ or ‘moving’ even by people who have no previous knowledge of Old Norse.

Figure 1. A verse from *Völuspá*. Each verse is presented both in the original 1280 manuscript form and also in a print version. Here, the reader has clicked on *salar* (‘earth’s’) in the manuscript version (highlighted in a green frame). The lower pane shows that the word in red also occurs in another verse.

## Völuspá

Here, you can see three verses from *Völuspá*, Tolkien's favourite Old Norse poem. Each verse is presented both in the original 1280 manuscript form and also in a print version. Hover over words in either version to see translations, click on them to hear the word spoken.

### Verse 4. The creation of Middle Earth.



**salar**

**Grammar information**

**Lexicon poeticum entry**

← Áðr Burs synir bjöðum um yppðu, þeir er Miðgarð mæran skópu; sól skein sunnan á **salar** steina, þá var grund gróin grænum lauki.

← Sól varp sunnan, sinni mána, hendi inni hægri um himinjódyr; sól það né vissi hvar hon **sali** átti, stjörnur það né vissu hvar þær staði áttu, máni það né vissi hvað hann megin átti.

Notes

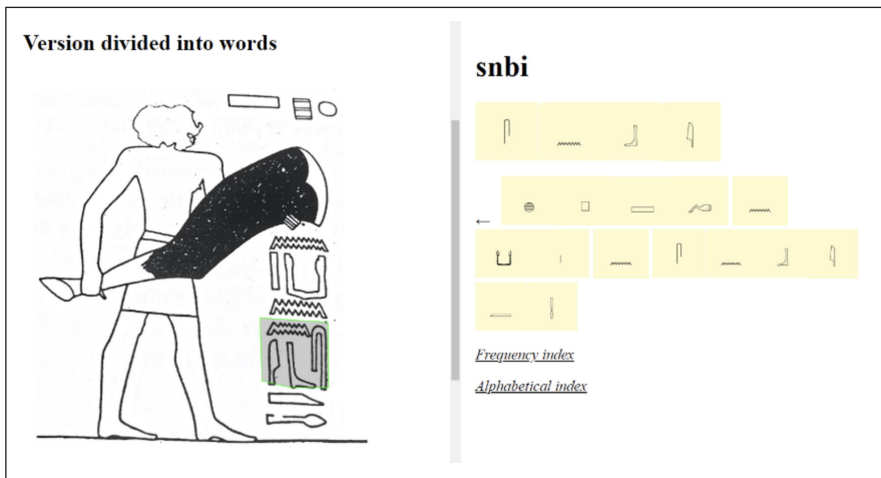
Frequency index

Alphabetical index

## 2.2. An inscription in Ancient Egyptian hieroglyphs

The second document (Figure 2) is available online<sup>10</sup> and presents an Ancient Egyptian inscription taken from a popular introductory text on hieroglyphs (Collier & Manley, 1998). Again, the methods from Bédi et al. (2022) have been used to associate appropriate areas in the image with words and individual glyphs. In this example, the central goal is to make the apparently indecipherable hieroglyphs comprehensible, so that the visitor can experience the unfamiliar and enjoyable sensation of reading and understanding them. In contrast to the Old Norse example, the audio is of less importance and is primarily decorative. The LARA multimedia version presents the Ancient Egyptian inscriptions in two versions: the first version, left, shows it divided up into words, and the second version (right) shows it divided up into individual hieroglyphs. In both cases, hovering over something shows a popup with a gloss, and clicking shows more information and plays audio recorded by a native Egyptian male voice talent.

Figure 2. This inscription (highlighted in green frame) says, roughly: ‘Ox-leg for the *ka* (soul) of Senbi, the virtuous’. Here, the reader has clicked on the highlighted word *snbi* (the name ‘Senbi’). This brings up the explanatory linearised text on the right and plays an audio version.



10. [https://www.issco.unige.ch/en/research/projects/callector/hieroglyphics1avocabpages/\\_hyperlinked\\_text\\_.html](https://www.issco.unige.ch/en/research/projects/callector/hieroglyphics1avocabpages/_hyperlinked_text_.html)

### 3. Preliminary evaluation with questionnaire

We circulated a link to the summary page hosted on the University of Geneva's server, encouraging people to look at the two examples described in the preceding section and fill in a short anonymous questionnaire with nine questions created in Google Forms, which was distributed on social network sites for learning languages. We received responses from 24 subjects (12 female, 11 male, one other). In response to the first question, *Generally, are you interested in texts written in ancient languages?*, 18 (75%) replied "Yes" and four (17%) replied "A bit". In response to the second question, *When you visit museums, do you like to look at texts in ancient languages?*, we received 16 answers of "Yes" and eight of "A bit". In response to the third question, *What was your reaction to the examples of the multimodal ancient texts here?*, 17 subjects (71%) gave the most positive answer ("Very interesting, I spent some time looking at them") and the other seven (29%) gave the second most positive answer ("Kind of fun, I flipped through them a bit"). In response to the fourth question, *Would you be interested in accessing similar multimodal texts in ancient languages on a museum website?*, 18 (75%) selected "Very interested" and four (17%) selected "A bit interested". In the fifth question, where a list of statements was presented and subjects were asked to tick all the ones they agreed with, 20 (83%) ticked "Multimodal texts like these would help me understand text exhibitions at museums" and nine (38%) ticked "I like to read about museum exhibitions before or after I visit, I might use them then". The sixth question invited subjects to give free-form comments about how the annotated texts could be improved. Unsurprisingly, given that much less work has been invested in it and it is still rather rough, most of the criticism was directed towards the hieroglyphics example; it was also apparent that subjects would have liked the material to be easily available on mobile devices. However, in the seventh question, which asked for general free-form comments, all replies were extremely positive.

### 4. Conclusions and further directions

The large number of positive responses to the first two questions on the questionnaire suggest a self-selection effect: people interested in ancient languages are evidently overrepresented in this population. Also, the sample is fairly small. With these caveats, our impression is that people who like ancient languages would welcome the introduction of this kind of technology in relevant museums, and would perceive it as substantially enhancing the museum experience. Encouraged by this, we have begun to discuss the idea with people active in the museum world. Their

initial response has also been positive: in particular, they seem attracted to the idea of making text exhibits more open, technologically enhanced, and accessible.

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# The development of the FineTune app

Sivan Black-Rotchin<sup>1</sup> and Walcir Cardoso<sup>2</sup>

**Abstract.** This paper introduces *FineTune*, a mobile application currently in development that features a gamified version of High Variability Phonetic Training (HVPT). The aims of this paper are twofold: (1) to outline the theoretical motivation for the app's features, which includes a discussion of HVPT, gamification, and Self-Determination Theory (SDT), and (2) to describe how *FineTune* functions as a mobile application, considering the theories that informed its design.

**Keywords:** gamification, mobile-assisted language learning, high variability phonetic training, pronunciation.

## 1. Introduction

HVPT, as stated in Black-Rotchin's (2022, p. iii), is an established method of improving the learner's perception and potential production of second/foreign language (L2) segments, which has received considerable attention by the research community (Barriuso & Hayes-Harb, 2018). However, this technique is unknown to most teachers and is rarely translated into usable pedagogical tools (Thomson, 2018), despite the known issue that many teachers feel uncertain about how to effectively teach pronunciation (Foote, Holtby, & Derwing, 2012). Thomson (2018) notes that one reason for this disconnect may be that in its current lab-based form, HVPT is neither accessible nor engaging to L2 learners. In order to mitigate both issues, he suggests implementing this training into a mobile application and adding game elements to the existing HVPT paradigm. He posits that such changes may help in bridging the gap between pronunciation research and pedagogical practices.

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**How to cite this article:** Black-Rotchin, S., & Cardoso, W. (2022). The development of the FineTune app. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 24-29). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1429>

In response to these suggestions, this paper introduces the blueprint for *FineTune*, a mobile application that features a gamified version of HVPT to help learners hone their perception of L2 English sound systems. The perceptual training in *FineTune* involves learners progressing through three levels of gamified forced-choice identification tasks whereby learners select the correct target sounds according to the stimuli heard (Figure 1 illustrates the training of /ɛ/, the vowel in ‘bet’). They also have the options of testing their production skills through a speech recognition feature and joining a learning team to connect with other learners.

Figure 1. The interface of *FineTune*



The design of *FineTune* is informed by selected variables of past HVPT studies, as well as [Stockwell and Hubbard’s \(2013\)](#) ten principles for developing MALL tools. The game elements of the app were chosen based on [van Roy and Zaman’s \(2017\)](#) nine gamification heuristics for educational contexts, which itself is informed by [Deci and Ryan’s \(2000\)](#) SDT. These constructs will be explored in the following section.

## 2. *FineTune*: theoretical motivation

### 2.1. HVPT

HVPT is a form of pronunciation training that constitutes the basis for *FineTune*. HVPT is a method of improving learners’ perception (and consequently production)

of speech sounds by exposing learners to multiple voices producing the same target sound/s. HVPT has been shown to produce perception gains of consonants (Cebrian & Carlet, 2014), vowels (Lambacher et al., 2005), and tones (Perrachione, Lee, Ha, & Wong, 2018) with learners of varying L1s. Within *FineTune*, HVPT tenets appear in the variability of speakers (e.g. different ages, gender) and phonetic environments of the target sounds (e.g. in word-initial and word-final positions), as well as in the forced-choice identification tasks that are accompanied by immediate feedback.

## 2.2. Gamification

Gamification is the process of adding game elements to non-game contexts, with the aim of fostering gameful and playful emotions that increase engagement (Hernandez-Gonzalez, 2021). SDT explains why certain game elements succeed in cultivating this engagement: they satisfy the basic human need to feel autonomous, competent, and connected to others (Deci & Ryan, 2000). In *FineTune*, game elements are selected based on their empirically-demonstrated ability to satisfy at least one of these three needs. Game design is also informed by van Roy and Zaman's (2017) gamification heuristics, which outlines how game design (not just the selection of game elements) can be harmonious with SDT.

## 2.3. Mobile-Assisted Language Learning (MALL)

MALL allows for student-centered learning that offers an unprecedented degree of customization in terms of where and how the learning takes place. The limitations and affordances of the medium are taken into account in the design of *FineTune* by following Stockwell and Hubbard's (2013) principles for developing MALL tools. For instance, multi-tasking is limited, tasks are kept short and manageable, and users' autonomy and individual differences are considered in the design of activities.

## 3. *FineTune* description

In *FineTune*, learners practice perceiving and producing sounds using a set of gamified forced-choice identification tasks that are broken down into three scaffolded levels. Before a learner begins training, they are prompted to create a profile that suggests sounds to target based on their linguistic repertoire. They are also prompted to create a specific and measurable goal to guide their training (e.g. to learn English interdentals by a given date). Learners are also given the choice

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of joining a learning team of others who are practicing the same sounds. After creating a profile, they can start progressing through the levels. Level 1 involves identifying the target sound(s) in non-words, Level 2 in real words, and Level 3 in carrier sentences. In the training, users collect points toward badges that represent mastery of a sound. Once they have completed all levels with a perfect score, they are awarded the badge, which is added to their profile.

*FineTune* attempts to accommodate the three needs recommended by SDT: user autonomy, competence, and connectedness. User autonomy is present in *FineTune* in many ways: users can choose which sounds to practice, they can decide to join a team, and they can opt out of certain game elements, such as time limits. They set learning objectives for themselves and have the ability to share and gain knowledge from other users. In addition, many of the game elements in *FineTune* instill feelings of increasing competence. Levels are scaffolded based on difficulty, points and badges act as signifiers of skill, forums allow for the exchange of information, and progress bars on users' profiles indicate their proximity to achieving their goals. Relatedness is accounted for in *FineTune* through the learning team, whereby users can feel that they are not alone in their endeavor; should they wish, they can solicit the help of another learner, or offer assistance themselves.

Finally, *FineTune* incorporates other game elements such as the use of musical motifs and aesthetic design, time limits, and the tactile nature of the perceptual training.

#### **4. Concluding remarks**

The main goals of this study were to motivate and map out the blueprint for the mobile application *FineTune*, a mobile application developed by the authors that features a gamified version of HVPT. This conceptual study represents Stage 1 of 4 in [Cardoso's \(2022\)](#) chronological description of how computer assisted language learning research is conducted, whereby the motivation and creation for the app is described prior to investigating its pedagogical affordances, user attitudes, and its pedagogical efficacy in the learning of L2 pronunciation. Hopefully, by chronicling the development of a MALL tool from inception to creation, more such studies will explore the tangible bridging of research findings and pedagogical tools for educators and learners to use.

The next step in development is to build a prototype of the application, which will likely involve modifications to the current design. These changes will be

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documented as part of the process. Once a prototype has been completed, the pedagogical efficacy of the tool will be assessed, as well as user attitudes. One possible way of carrying out this assessment is by using the technology acceptance model (Davis, 1989) which examines users' perceptions of the usefulness and useability of a tool.

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# Learners' perceptions of using Moodle Books in online ESP courses

Maria del Carmen Boloña<sup>1</sup> and Christopher Allen<sup>2</sup>

**Abstract.** This paper examines learners' perceptions of using Moodle books in the online course module *Contemporary society: conflicts and consensus* at Casa Grande University, Ecuador. It describes how learners perceived the use of Moodle books in 48-hour English content based courses. Courses were designed for final year students with a B2 English proficiency level according to the Common European Framework of Foreign languages (CEFR). The learners used Moodle books to access content organized and programmed in six thematic units according to the course learning objectives. Learners used content to access reading material and complete tasks planned synchronously and asynchronously. Learners responded to a post course survey in courses that ran from 2020 to 2021. The purpose of the survey was to know how learners perceived the organization, functionality, and effectiveness of Moodle books when accessing hyper-texted content, multimedia resources, and digital tools for content management, communication, and interaction in online courses for English for Specific Purposes (ESP).

**Keywords:** Moodle VLE/CMS, online courses, learning platform.

## 1. Introduction

Over the past 20 years, the use of online learning platforms such as *Moodle*, *it's learning* and *blackboard* has become commonplace in universities all over the world. It is possible to see these platforms as Virtual Learning Environments (VLEs) where students engage in learning activities relating to their course module and as purely administrative tools to communicate with course participants, update grades, or track progress (Course Management Systems – CMSs), or as a mixture

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**How to cite this article:** Boloña, M. d. C., & Allen, C. (2022). Learners' perceptions of using Moodle Books in online ESP courses. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 30-35). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1430>

of both conceptualizations. An early introduction to VLE/CMSs and a discussion of the institutional choices involved in the adoption of online learning platforms can be found in [Weller \(2007\)](#). With the recent pandemic increasingly forcing higher education institutions to adopt online or blended solutions, the place of online learning platforms at university level seems assured, at least for the time being.

The rise of the VLE/CMS phenomenon has put increasing pressure on teaching staff to become 'learning designers' who need to carefully consider the structure, clarity, and ease of navigation of the materials they put on the platforms. An additional requirement is that learners should be able to access VLE/CMSs through the interfaces of mobile phones and devices as well as stationary computers.

One consequence of these concerns is that many Moodle sites may not be adequately designed, with long sequences of incoherent and haphazardly arranged materials, forums, and assignment holders. At this point it seems fair to say that technology is not fully serving its purpose when/if content is not properly categorized and organized. In this respect, [Egbert \(2005\)](#) points out that "technology accomplishes learning goals with less time and work for teachers and learners" (p. 12) in guidelines for using educational technology in language classrooms. This is obviously not the case when/if Moodle activities are time consuming and disconnected.

Another consequence is that Moodle sites may not be intuitive enough. In other words learners may not access and interact easily if content is not arranged and presented properly. Learners are Moodle independent site users and make their own choices in the VLE. [Richards and Lockhart \(1996\)](#) describe some characteristics of language learners when he states that "learners, too, bring to learning their own beliefs, goals, attitudes, and decisions, which in turn influence how they approach learning" (p. 52). They need a clear path to manage content and navigate. Therefore, content design and presentation play an important role in facilitating content navigation and interaction.

In Moodle, platform developers have attempted to counteract these problems through the use of so-called 'books' which enable teaching staff to compress and structure large amounts of text and graphics in the form of numbered chapters and subchapters. Referring to the scientific basis of learning published in the volume *How people learn*, [Bransford, Brown, and Cooking \(2003\)](#) state that "[l]earning and understanding can be facilitated in learners by emphasizing organized, coherent bodies of knowledge" (p. 239). This volume reports on scientific research on the new science of learning, providing information about:

- memory and structure of knowledge;
- problem solving and reasoning;
- the early foundations of learning; and
- regulatory processes that govern learning, including metacognition (Bransford et al., 2003, p. 14).

The purpose of this study is to describe learners' perceptions of the use of Moodle books in ESP courses. The study is within the context of higher education in South America<sup>3</sup>, a continent which in some quarters have been seen to be lagging in terms of digitalization. It looks at how 49 learners accessed Moodle books through the course menu. The menu was structured in six units and unit tasks. It additionally included menu options such as a general bulletin board used to coordinate activities, tests, and events, a 'coffee lounge' for social interaction, and a wiki to maximize research among participants. Learners used a Moodle book in every unit to access topics and subtopics organized in chapters and subchapters. They read hyperlinked material and used digital resources to complete tasks sequenced numerically through the main menu. Moodle books included visual aids, videos, and presentations to support and develop content. Students' perceptions were collected in a Google survey form at the end of the course.

## 2. Method

The students, aged 20 to 22, took the course in the third year of studies. The students were all Spanish native speakers but they used English in ESP classes to communicate, interact, and complete their tasks. All of them had a B2 English proficiency level which is an academic requirement to take advanced English content subjects.

The data source was a post-class survey. Forty-nine students answered the survey in Google Forms at the end of the courses from 2020 to 2021. The aim of the survey was to gather information about students' perceptions and feedback of the organization, functionality, and effectiveness of Moodle books. Students responded to seven questions. All questions focused on students' opinions about the use of Moodle books in their courses. The first six questions included different items of choices related to the use of Moodle books in online courses. Items were ranked on a Likert grading scale according to students' individual choices. Question 7 was an open question requiring students' additional comments.

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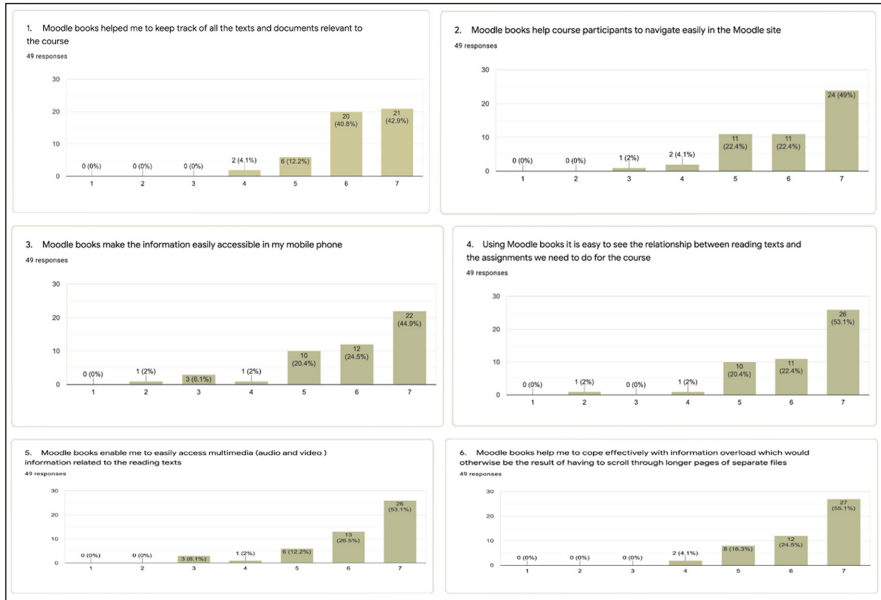
3. <https://www.oecd-ilibrary.org/sites/14bb093f-en/index.html?itemId=/content/component/14bb093f-en>

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### 3. Results and discussion

The results from the survey are presented below in the form of a fairly self-explanatory histogram of the responses from the students (Figure 1).

Figure 1. Learner responses to the survey questions, rated a Likert scale of one (no agreement) to seven (complete agreement)



As can be seen from the above histogram plots, responses from the students were in general very positive to the use of Moodle books in the structuring and presentation of information on the Moodle course site pages. This positive perception related to the ease of navigation on the site both from stationary computers and mobile devices such as cellphones and tablets as well as establishing a clear link from the course reading comprehension texts and the assignments required for the assessment of the course. The responses also pointed toward easing work loads and increasing learning effectiveness which are important factors for this target group of students, many of whom are studying alongside full- and part-time employment.

Twenty seven out of 49 students posted survey comments that mostly highlighted aspects of Moodle books as shown in a representative selection of students' answers.

“The Moodle books are of great use and make work easier”.

“They are great for an introduction, it helps keep track of what we’ve seen”.

“The information in the books were more than enough to understand and complete the assignments, they were a great addition”.

“I consider Moodle books to be a summary of a specific topic. Being that they guide me on a topic”.

## **4. Conclusions**

The results are perhaps not particularly surprising in the sense that Moodle books are seen to bring a number of positive outcomes in this wholly online context. The main findings seem to indicate at least for this small sample that course participants are very much aware of appearance and structuring of information on the course pages and that these design aspects may be important factors in their successful completion of the course alongside employment responsibilities.

There is a clear message to university academics designing courses either wholly online or in blended mode that the packaging and structuring of information and the graphic appearance of page content are very important to ensure learning progress and course completion. University teachers are of course content experts in the subjects they are teaching, but they are unlikely to possess the skills of a graphic designer to aid them in the process of course design. Moodle books however offer teaching staff the possibility to produce simple and easily navigable course sites where information is packaged in an readily accessible format. This is certainly one area in which institutional educational technologists can assist academic teachers in developing their course design and graphic presentation skills.

Students perceive positive effects in content access, management, and interaction when they use Moodle books. This research has shown the importance of incorporating students’ views in the design and development of ESP courses where Moodle books’ organization, effectiveness, and functionality can maximize students’ learning results.

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# Online language teacher education and active learning through CALL and ICALL

Giovanna Carloni<sup>1</sup>

**Abstract.** This essay illustrates how an online language education course, implemented within an online language teacher education programme offered at master's level at an Italian university, was designed to foster pre-service teachers' active learning through digitally-enhanced activities. The course was developed within a community of inquiry framework and from a socio-constructivist perspective. The online course adopted a flipped learning approach. Pre-service teachers carried out asynchronous digitally-enhanced activities individually and collaboratively before class and synchronous technology-enhanced collaborative activities during live classes. Pre-service teachers thus engaged in active learning throughout the course.

**Keywords:** online learning, language teacher education, active learning, educational technology.

## 1. Introduction

The Covid-19 disruption has fostered the digitisation of education extensively. In this new context, teacher education programmes have had to re-imagine their learning spaces and practices to cater to teachers' pedagogical needs in online learning environments (Assunção & Swennen, 2020). Online course design has thus become pivotal in higher education worldwide. In this respect, the present essay aims to illustrate how an online language education course was designed to foster pre-service language teachers' active learning through synchronous and asynchronous digitally-enhanced activities. The course was implemented within an online language teacher education programme, offered at master's level at an Italian university, targeted at pre-service teachers specialising in teaching Italian as a second language.

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**How to cite this article:** Carloni, G. (2022). Online language teacher education and active learning through CALL and ICALL. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 36-40). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1431>

## 2. Online language education course design

In the online language education course, pre-service teachers learned how to plan and create digitally-enhanced language teaching units. The online language education course was designed within a community of inquiry framework (Garrison, Anderson, & Archer, 2000, 2001; Vaughan, Cleveland-Innes, & Garrison, 2013) and from a socio-constructivist perspective, enhancing knowledge co-development (Lantolf, Poehner, & Thorne, 2020; Lantolf & Thorne, 2006; Vygotsky, 1978). In keeping with the community of inquiry model, the course instructor created practices and activities targeted at fostering social, teaching, and cognitive presence (Garrison et al., 2000, 2001; Vaughan et al., 2013). The course was developed using backward design; the instructor thus devised the course learning outcomes first, the assessment criteria second, and the strategies and activities targeted at achieving the course objectives afterwards (McTighe & Wiggins, 2012).

The online language education course was designed to foster pre-service teachers' active learning with the support of digital and educational technologies. In active learning, students engage in knowledge construction using higher-order thinking skills (Bonwell & Eison, 1991; Børte, Nesje, & Lillejord, 2020; Lee, Morrone, & Siering, 2018; Prince, 2004; Stefanou et al., 2013). In this light, the instructor adopted a flipped learning approach to design digitally-enhanced pedagogical practices promoting critical thinking (Bergmann & Sams, 2012, 2014; Marshall & Kostka, 2020; Marshall & Rodriguez-Buitrago, 2017). Pre-class activities required pre-service language teachers to engage with subject-specific content and peers to various degrees. For example, before Zoom-based<sup>2</sup> classes, pre-service teachers watched videos, previously recorded by the instructor, and carried out activities, focusing on the video content, using various digital technologies, such as avatar maker tools, mind mapping, peer assessment tools, AI-driven technologies, and digital social educational platforms suitable for collaborative annotation of texts and videos. In this respect, a digital social educational platform used, Perusall<sup>3</sup>, provided the instructor with reports, based on data analytics, highlighting the most challenging topics for students; the instructor could also access reports on individual students' degree of engagement with the assigned materials. These data enabled the instructor to design synchronous activities catering to pre-service teachers' needs. During synchronous classes, activities were highly chunked in line with digital pedagogy (Bates, 2019). In live classes, pre-service teachers engaged with tasks fostering higher-level thinking skills and a deeper conceptual understanding of the

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2. <https://zoom.us>

3. [www.perusall.com](http://www.perusall.com)

subject-specific content studied during pre-class asynchronous activities (Brinks Lockwood, 2014, 2018). Synchronous classes started with ice breakers, pivotal to promoting social presence in online spaces; the instructor implemented ice breakers with the support of digital noticeboards or digital pedagogical platforms suited to promoting remote collaboration. During Zoom-based classes, pre-service teachers engaged in collaborative learning through peer instruction (Mazur, 1997), SOFLA (Synchronous Online Flipped Learning Approach – Marshall & Kostka, 2020), and liberating structures activities (Lipmanowicz & McCandless, 2014). In synchronous classes, pre-service teachers thus engaged in active learning through collaborative activities implemented with the support of collaborative annotation spaces, digital noticeboards, and digital educational platforms suitable for remote collaboration. Digital and educational technologies, along with digital educational platforms, were instrumental in developing cognitive and teaching presence in the course.

Pre-service teachers developed a digitally-enhanced language teaching unit collaboratively during the course. Each week, as home assignments, pre-service teachers devised a section of the digitally-enhanced teaching unit in small groups. Before synchronous classes, the instructor assessed the artefacts created collaboratively and provided each group with video recorded feedback, also suited to fostering social presence. Pre-service teachers developed a digitally-enhanced teaching unit collaboratively as their final assignment. Before submitting the units for assessment, each group received video recorded feedback from the instructor; pre-service teachers could use the feedback to make some changes to the units before submission.

At the end of each live class, pre-service teachers filled in an online self-evaluation questionnaire. The instructor used students' feedback, gathered through the online self-evaluation questionnaires, to monitor the course and make some changes if necessary. On the last day of class, the instructor introduced pre-service teachers to the theoretical framework, namely the community of inquiry model, adopted to design the course.

### **3. Conclusion**

The fast digitisation process occurring in higher education has enabled course instructors to re-image their learning practices and spaces. Re-thinking online learning environments has provided language education practitioners with the opportunity to design online learning pathways fostering students' active learning and engagement to a very high degree.

This essay has illustrated how an instructor designed an online language education course fostering pre-service teachers' active learning and engagement through a flipped learning approach. The asynchronous and synchronous digitally-enhanced practices developed were targeted at developing pre-service teachers' higher-level thinking skills and deeper conceptual understanding of subject-specific content. Knowledge co-construction was scaffolded through the use of various digital and educational technologies and platforms instrumental in fostering collaborative learning and artefact creation.

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# Blended mobility project: Ireland, Germany, and Spain

Úna Carthy<sup>1</sup>

**Abstract.** Within the parameters of the new Erasmus programme, this Blended Intensive Programme (BIP) combines virtual exchange with physical mobility. There were three institutions involved in this project: Letterkenny Institute of Technology, Ireland, Hochschule Bremerhaven, Germany, and Malaga Healthcare College, Spain. The virtual exchange ran for five weeks from November to December 2021 and the physical mobility took place in Bremerhaven in the first week of April 2022. Twenty-seven participating students from diverse academic backgrounds engaged in shared tasks during the virtual exchange on a Blackboard platform, hosted by Letterkenny Institute of Technology and were awarded two ECTS credits, which was embedded into their local curricula. Content was delivered using both synchronous and asynchronous tools. The topic was global citizenship and students collaborated in multicultural teams to create presentations on their chosen topics. In addition to this team work, they also shared their individual insights into the course content by posting to a discussion forum in Weeks 1, 3, and 4.

**Keywords:** blended mobility, virtual exchange, global citizenship.

## 1. Introduction

The trilateral partnership underpinning this project was initiated in March 2020 when Europe went into its first Covid lockdown. Subsequently, a six-week pilot project (virtual-only), supported by Unicollaboration, ran from November until December 2020, with 36 students from Malaga, Bremerhaven, and Letterkenny participating. Building on this, the current project adds a physical element to create a BIP. This article will begin with a brief discussion of the concept of blended

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**How to cite this article:** Carthy, Ú. (2022). Blended mobility project: Ireland, Germany, and Spain. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 41-46). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1432>

mobility, before describing the specific details of this BIP. It will outline both virtual and physical elements of the programme, and describe student profiles, aims, and learning outcomes and show how the insights of prior studies in the area have informed the design and implementation of the current project.

## 2. Blended mobility

The concept of blended mobility, while in its infancy, has already generated interest among some scholars. Essentially, blended projects combine physical mobility with some element of virtual exchange; this blend of physical and virtual comes in various iterations. It is not surprising that the new Erasmus programme 2021-2027 has prioritised blended mobility, given the manifold educational benefits it can provide (Helm & O'Dowd, 2020). While recognising these advantages, scholars are anxious to emphasise the challenges to be overcome when embarking on such projects. Purg, Širok, and Brasil (2018) discuss the transformative effect of blended mobility in the context of the Master's programme in Media Arts and Practices which ran from 2011 until 2014 in four EU countries; in particular, they highlight the intercultural value added to the learning experience (Purg et al., 2018). Welzer, Escudeiro, Druovec, and Holbl (2018) also acknowledge the positive impact of such programmes, as a way of internationalising the education system in the context of the AIM project which ran from 2016 until 2018 and involved ten EU countries. Nonetheless, they identify some of the intercultural challenges associated with blended mobility and propose a toolkit for dealing with them. Helm and O'Dowd (2020) emphasise that learning pathways need to be carefully designed, so that students can get the maximum benefit from such programmes (Helm & O'Dowd, 2020). These insights informed the development of the blended mobility programme described here.

## 3. Virtual exchange and physical mobility

While the preliminary project conducted in November 2020 was supported by Unicollaboration's Moodle platform, the virtual element of this BIP was housed on Letterkenny Institute of Technology's (now ATU Donegal) Blackboard website. The virtual-only exchange had created an opportunity for transnational collaboration during socially distanced Covid times (Carthy, 2021b); however the current programme adds another dimension to this with the physical mobility visit. The five-week virtual learning pathway extended from 8 November until 12 December 2021. Malaga and Bremerhaven participants were given guest access

to this platform and completed a GDPR form, stating that they would abide by Letterkenny's privacy policy regarding personal data. This was a vital preliminary step in setting up a learning environment with social presence for students to share and engage. Another important feature of the project, which had already been highlighted in the pilot project as a creator of social presence, was the assessment strategy (Carthy, 2021a). All set tasks involved some element of collaboration or sharing among students and were weighted as follows:

- discussion forum: 40%;
- team presentation: 40%;
- synchronous sessions: 20%.

In the discussion forum in Week 1, students had to introduce themselves to the community by posting a video/photo or text and respond to at least two of their fellow participants' posts. In Weeks 3 and 4, students had to post a 50-word reflection on the synchronous session in English, Spanish, or German, and respond to at least one of the other posts.

For the group presentation, tutors formed multicultural teams, ensuring a good mix of cultural background and gender. Once formed, groups had to select a leader, agree on a topic (from six possible options), and plan to deliver their presentation, with each member contributing two/three slides to the overall PowerPoint presentation.

Finally, students were awarded 20% for their attendance at three synchronous sessions in Weeks 1, 3, and 4. These synchronous sessions were carefully managed, with a maximum of ten students per session and a good mix of nationality and gender. Week 1 concentrated solely on ice-breakers and games, to encourage maximum participation and engagement; whereas Weeks 3 and 4 focused on intercultural topics which would equip students with the skills necessary to carry out their teamwork.

The physical element of the BIP, which took place in Bremerhaven, the designated host institution, was a week-long stay from April 4-10, some four months after the virtual element was completed. Prior to their departure, Malaga and Letterkenny students had to complete Learning Agreements and take out Covid insurance (in the event that they might contract the virus while in Bremerhaven). Students attended workshops in the mornings and went on sightseeing trips in the afternoons, with Thursday given over to a full day outing to Bremen. The workshops provided opportunities for participants to apply the intercultural concepts introduced during their synchronous sessions in Weeks 3 and 4 of the virtual exchange. On the

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final day they shared their reflections on the workshop and did presentations in multicultural teams.

#### 4. Student profile and global citizenship

In keeping with the priorities set out in the Erasmus programme guide, the student profile in this BIP was quite diverse, including ‘all types of students from all backgrounds, study fields and cycles’<sup>2</sup>.

Figure 1. Cultural and academic diversity

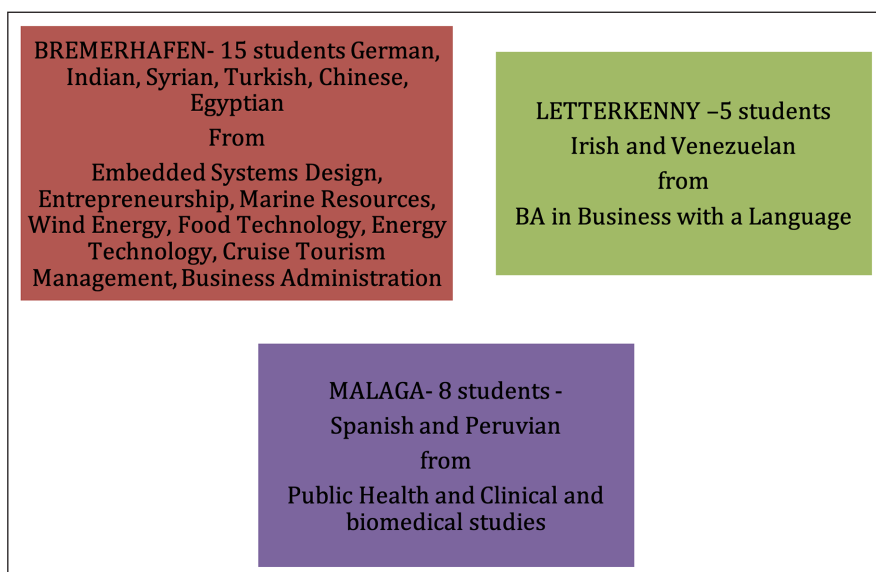


Figure 1 (above) illustrates multicultural and academic diversity within BIP participants, with six nationalities represented in the Bremerhaven cohort, two nationalities in each of the Letterkenny and Malaga cohorts. However, the academic diversity is most noticeable in the Bremerhaven cohort, with a total of eight disciplines represented. Both Letterkenny and Malaga participants are from more homogenous backgrounds, by comparison.

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2. For more information see Erasmus programme guide: <https://erasmus-plus.ec.europa.eu/programme-guide/part-b/key-action-1/mobility-project-for-higher-education-students-and-staff>

This wide range of academic disciplines and multicultural diversity among participants provided a rich resource for the topic of global citizenship. The programme aimed to equip students with the following:

- an understanding of collective identity, particularly intercultural sensitivity and respect for diversity;
- an ability to think critically about global challenges and opportunities;
- interpersonal and digital skills, with an aptitude for networking in multicultural settings; and
- an ability to engage collaboratively to create a more sustainable world.

## 5. Conclusion

The pedagogical benefits of blended mobility programmes are quite evident in both the background literature and the BIP described above. Not only do these programmes have the potential to develop 21st century skills, but also intercultural and interpersonal communication skills so important in today's multicultural workplace. However, as highlighted in prior studies, adequate design and management of both virtual and physical elements plays a pivotal role in their success. For virtual platforms, a sense of social presence on the learning pathway should ensure that students will engage and interact, thereby creating a dynamic learning community. This sense of community will be further enhanced when participants meet face-to-face for the physical element of the BIP. Further research into the learning experience of BIP participants will serve to inform future blended mobility programmes and ensure that more students from diverse academic backgrounds and nationalities have an opportunity to avail of them.

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# Evaluation of the DDL training workshop for in-service Chinese language teachers

Li-ping Chang<sup>1</sup> and Chun-Ting Chou<sup>2</sup>

**Abstract.** In this study, we held a 12-hour workshop focused on training the Data-Driven Learning (DDL) approach for in-service Chinese teachers aiming to implement this pedagogy in Mandarin Chinese classrooms in the future. We analyzed data from a postworkshop questionnaire to understand how the individual-level traits of Chinese teachers (such as their experience, ability, and motivations) relate to their integration of corpus-based methods. The questionnaire results indicate that teacher confidence in using the corpus is critical for the future application of DDL in teaching Chinese as a second language. Teachers who use corpus-based pedagogies are more positive at designing and guiding DDL activities and are more willing to practice DDL in language classes.

**Keywords:** data-driven learning, Chinese language, teacher training, questionnaire, corpus.

## 1. Introduction

The DDL approach has been widely embraced in second language curricula in Western countries for many years (Boulton & Tyne, 2013). However, corpus-based pedagogies, such as DDL, are recently gaining traction in Chinese as a Second Language (CSL) classrooms (Smith, 2018; Wang, Hsu, Long, & Liles, 2020). To facilitate the implementation of this method, studies have specified that language teachers should be acquainted with the basic concepts of corpora, skills of using corpora tools, knowing how to interpret corpora data, and knowing how to generate corpus output into their teaching specialty, etc. (Callies, 2019; Mukherjee, 2006). However, for CSL teaching, it is more challenging to familiarize teachers with

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**How to cite this article:** Chang, L.-P., & Chou, C.-T. (2022). Evaluation of the DDL training workshop for in-service Chinese language teachers. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouëсны, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 47-51). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1433>

corpus consulting techniques, because the lack of clear boundaries between Chinese characters and words can make applying the DDL more difficult (Smith, 2018). Research has also indicated that the individual-level characteristics of teachers (for example, experience, motivation, attitudes toward corpus-based pedagogy) were related to their probabilities of using the corpus approach in the classroom (Chen, Flowerdew, & Anthony, 2019). To enhance future DDL teacher training outcomes, we will describe the design of our current training content and discuss our postworkshop questionnaire analysis.

## 2. The DDL teacher training workshop

The workshop, led by a university professor who specialized in corpus linguistics, was divided into four weeks with three hours of lectures per week using Google Meet. To increase the possibility and relevant skills of CSL teachers to adopt the DDL approach, the workshop mainly focused on teaching (1) basic concepts of Chinese corpora (e.g. word segmentation and part of speech); (2) skills in consulting Chinese corpora, particularly the largest Mandarin corpus in Taiwan, Chinese of Contemporary Taiwanese Mandarin; (3) the corpus query tools, Sketch Engine and AntConc; and (4) skills to analyze corpus data and generate pedagogical materials. Seventy-nine teachers (70% with a master's degree) participated in the workshop, with an average teaching experience of 9.8 years. Fifty participants finished the training and completed the final assessment of the workshop, which required them to design teaching materials and plans for a 50-minute DDL activity.

## 3. Gathering and analyzing data from postworkshop questionnaire

After the last lecture, 50 of the 79 participants completed a postworkshop questionnaire. The questionnaire was inspired by Leńko-Szymańska (2015); it comprised four open-ended questions to investigate the views of the participants in the workshop and 39 Likert-scale questions, of which 36 questions covered seven variables that reflect participants' traits, with three to 14 questions for each variable. These variables were self-evaluations of their (1) motivations for participating in the workshop, (2) prior knowledge of corpora, (3) skills toward using corpora after the workshop, (4) perceptions of adopting corpora in teaching, (5) skills to implement and design DDL activities, (6) willingness to adopt corpus-based methods in future teaching, and (7) evaluation of the workshop. These variables and the participants' teaching experience and educational background form nine variables that reflect

the traits of the CSL teachers. To reveal the relationship between the personal characteristics of the CSL teachers and the possibility of adopting corpora in teaching to improve the DDL teachers' future training, questionnaire responses were analyzed using a Spearman's rank-order correlation test in RStudio software. Before the correlation test, the scores for the questions under each variable were averaged. The test results of the relevant variables are shown in Table 1. The numbers in the center of the table are their  $\rho$  value (rho), and if there is any asterisk with them, the two variables have a correlation with significance.

Table 1. Test results of relevance variables to CSL teachers' use of corpus-based pedagogy<sup>3</sup>

	1	2	3	4	5	6	7	8	9
1	1								
2	.40**	1							
3	.33*	.21	1						
4	.23	.37**	.31*	1					
5	-.12	.22	.12	.49***	1				
6	-.42*	.08	-.13	.29	.72***	1			
7	.04	.23	.24	.28*	.52***	.59**	1		
8	.00	-.15	.06	.36*	.45**	.16	.23	1	
9	.14	.15	.43**	.22	.29*	.24	.47***	.16	1
Notes	<p>Variables that reflect the traits of CSL teachers are represented by Arabic numerals, which are as follows.</p> <ul style="list-style-type: none"> <li>• 1. Teaching experience (less than 1 year: 4%, 1-3 years: 14%, 3-5 years: 16%, 5-10 years: 24%, more than 10 years: 42%).</li> <li>• 2. Educational background (bachelor's degree: 24%. master's degree: 70%. PhD: 6%).</li> <li>• 3. Motivation for participating in the workshop (mean score: 3.75/4).</li> <li>• 4. Prior knowledge of corpora (mean score: 3.03/4).</li> <li>• 5. Self-assessment of their skills toward using corpora after the workshop (mean score: 3.09/4).</li> <li>• 6. Perceptions of adopting corpora in language teaching (mean score: 2.96/4).</li> <li>• 7. Self-assessment of the skills to implement and design DDL activities (mean score: 3.14/4).</li> <li>• 8. Willingness to adopt corpus-based methods in future teaching (mean score: 2.75/4).</li> <li>• 9. Evaluation of the workshop (mean score: 3.36/4).</li> </ul> <p>* means p-value &lt;.05; ** means p-value &lt;.01; *** means p-value &lt;.001.</p>								

3. The number presented in the table is  $\rho$  value (rho), which represents the correlation between the two variables, ranging from 1 to -1. Here, 1 represents the complete positive correlation between the two variables; -1 represents that the two variables are entirely negatively correlated; 0 means that the two variables have no correlation.

The results indicated that the CSL teachers were more confident in their corpus skills after training, more motivated to participate in the workshop, more willing to implement the DDL approach in future classes, and less resistant to using corpora. Furthermore, CSL teachers with prior knowledge of corpus-based pedagogy were more motivated to participate in training, had more confidence in their skills to operate corpora and implement DDL activities after training, were more willing to apply corpus-based pedagogy in the future, were less resistant to adopting corpora, and had a higher training evaluation score. The teachers' evaluation of the workshop and responses to the open-ended questions were positive. Many teachers responded that what the workshop had taught was of practical use to their teaching. This is compatible with research demonstrating that teacher anxiety and confidence in using corpus are major factors inhibiting the application of DDL approach (Lam, 2000; Römer, 2009).

#### **4. Conclusions**

Considering the positive feedback from CSL teachers, we believe that training courses benefit in-service teachers, reducing their anxiety about technology, and enhancing their confidence in integrating technological methods into teaching. By teaching corpus knowledge and guiding teachers to use corpora, our study trained in-service CSL teachers in DDL teaching, which is rarely practiced in CSL. Our analysis of the post-questionnaire results indicates that teachers with greater prior knowledge of corpus and more confidence in their abilities are more likely to apply the DDL approach in future classrooms. These findings indicate the utility of training workshops. However, it is too early to assess the actual benefits of DDL for CSL learners because it is not yet used in classrooms, and more research is required. Our study is but a starting point for research on the DDL approach in CSL.

#### **5. Acknowledgments**

We would like to thank Ms. Ruiting Shi for helping arrange the workshop and research fund from the Ministry of Science and Technology (grant no. MOST 110-2410-H-002-048).

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# A study of language, culture, and identity in technology-assisted video presentations of international students learning Chinese as a second language

Li Cheng<sup>1</sup>

**Abstract.** This paper reports a study in a technology-assisted Chinese teaching context where one major teaching objective is to encourage international students to participate in speech contests with the theme of ‘Tell China, Tell Your Stories’. Results showed that through four weeks’ preparation, all the students had a more robust method for presentation delivery and video making than before the project. Moreover, meeting conventional presentation standards was not only an issue of ‘language learning’, but also an issue of identity construction and negotiation. Finally, all participants had constructed positive ecocultural identities which encouraged respect for individuals, collaborative working, and a sustainable society.

**Keywords:** language and culture, identity, presentations, teaching Chinese as a second language.

## 1. Introduction

In the field of language learning, researchers of language, culture, and identity maintain that students develop ‘a sense of ownership’ of the target language that will ‘enable them to better negotiate their current circumstances and articulate a vision for the future’ (Norton & Gao, 2008; Norton & Toohey, 2011). Due to the impact of COVID-19, many educational exchanges in China have changed from face-to-face interactions to a fully online format, e.g. virtual conferences, online education and training platforms, online discussion communities, etc.

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**How to cite this article:** Cheng, L. (2022). A study of language, culture, and identity in technology-assisted video presentations of international students learning Chinese as a second language. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 52-57). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1434>

The purpose of this study is to explore the construction of identity from the sociocultural linguistic perspective. The research is guided by the theories of language socialization (Schieffelin & Ochs, 1986) and identity negotiation theory (Ting-Toomey, 2015). According to language socialization, learners are socialized in a community of practice. In this study, *identity* is defined as “an individual’s multifaceted identities of cultural, ethnic, religious, social class, gender, sexual orientation, professional, family/relational role, and personal image(s) based on self-reflection and other categorization social construction processes” (Ting-Toomey, 2015, p. 418). This sense of identification can be divided into four levels: individual, social, national, and ecocultural.

Apart from *identity*, two concepts of *culture* and *story* are also defined. Culture is the shared values, beliefs, and practices that can be interpreted in the meanings constructed by the participants in the local, national, and global contexts (Croucher, Sommier, & Rahmani, 2015). In this sense, the analysis of culture and communication from the ecological perspective can be viewed as “an engaged form of critical inquiry” featuring “discourse analysis of a wide range of texts” since “[l]anguage, culture, human cognition, stories and texts play a role in human ecology to the extent that they influence human behaviour, and hence the ways that humans interact with each other and the larger natural world” (Stibbe, 2015, p. 8). According to Stibbe (2015), discourses are the “stories in the minds of multiple individuals across a culture” (p. 6) and involve an element of cultural theme.

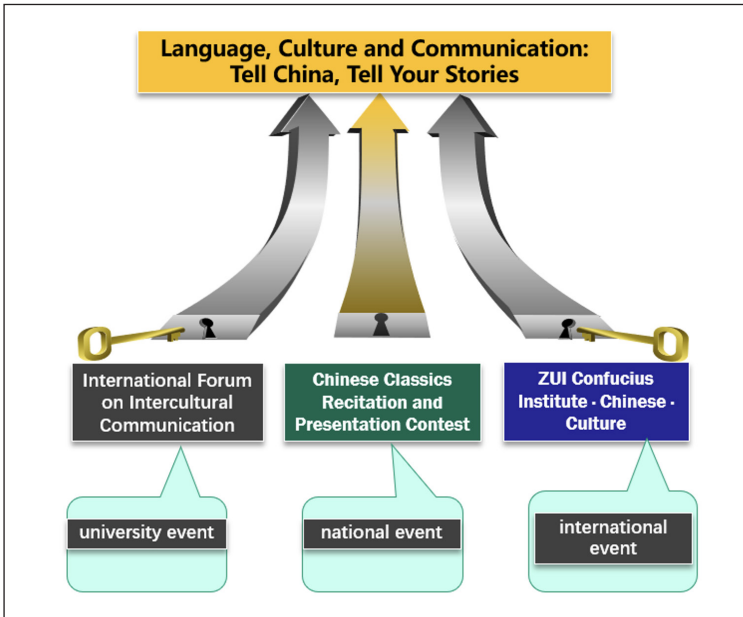
The two research questions are as follows: (1) What are the characteristics of the presentations? (2) How do the international students construct their identities in the presentations?

## 2. Method

This study (June–November of 2020) took place in the International Chinese Training Center at a university in Beijing. ‘Language, Culture and Communication: Tell China, Tell Your Stories’ is a pedagogical project aiming at helping international students improve their Chinese, share and appreciate cultural similarities and differences, and increase cultural awareness through participating in Chinese speech contests at three levels, including a university-wide event (i.e. ‘International Forum on Intercultural Communication’), a national event (i.e. ‘Chinese Classics Recitation and Presentation Contest’), and an international event (i.e. ‘ZUI Confucius Institute, Chinese Culture’, Figure 1).

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Figure 1. ‘Language, culture and communication: tell China, tell your stories’



The participants were 15 international students from ten countries along the Belt and Road. They had passed the Chinese proficiency test HSK-5. They spent four weeks getting prepared for the speech events under the guidance of a team of Chinese instructors.

Data include 26 video presentations submitted to three online events mentioned above, a questionnaire survey, ten semi-structured interviews, a pre-test and a post-test of the participants’ technology use based on the research by [Kim, Kim, Khera, and Getman \(2014\)](#), and reflective teaching notes. All the presentations were transcribed (26,311 Chinese characters) and then analyzed.

The questionnaire was adapted from those of [Brown \(2009\)](#) and [Littlewood \(2001\)](#) and evolved after being piloted with a different student group. It consisted of 30 items in three sections: views of authority (Cronbach’s  $\alpha=0.727$ ), students’ identities (Cronbach’s  $\alpha=0.713$ ), and intercultural competence (Cronbach’s  $\alpha=0.732$ ).

The questionnaire was distributed to the participants in mid-December of 2020 and 15 (100%) replies were collected. All the interviews were recorded and then transcribed.

### 3. Results and discussion

Discussion of the results in this section attempts to answer the two research questions listed above.

#### 3.1. Characteristics of the presentations

Analysis of the presentations shows two characteristics: technological support and beneficial discourses. First, results of the pre-test and the post-test show that all participants had a more robust method for presentation delivery and video making than before the project. The reflective teaching notes gave supporting evidence that the participants had made great progress in such presentation skills as ‘Chinese language communication’, ‘Non-verbal communication’, and ‘Visual aids’. When it comes to ‘Visual aids’, the students used a variety of technological tools to help them present and make presentation videos including virtual reality classrooms and video editing software.

The second feature of the presentations is beneficial discourses identified based on discourse analysis. Discourses can be divided into three categories: destructive, ambivalent, and beneficial. Despite their different cultural backgrounds, all participants shared their stories and their understanding of Chinese culture (Table 1). As can be seen from Table 1, the top three ecological viewpoints are ‘Cultural Differences and Shared Prosperity’, ‘Human and Nature’, and ‘Chinese History and Classics’.

Table 1. Viewpoints in the presentations

Number of presentations	Viewpoints	Percentage
10	Cultural Differences and Shared Prosperity	38.5%
4	Chinese History and Classics	15.4%
2	Digital Humanities	7.7%
6	Human and Nature	23.1%
4	Sustainability and Intangible Culture	15.4%

#### 3.2. Students’ identities

Presented below (Table 2) is the descriptive analysis of the questionnaire data related to authority, identity, and intercultural competence.

Table 2. Descriptive analysis of the questionnaire data

	Mean	Standard Deviation
Views of authority	4.36	0.93
Students' identities	4.02	0.82
Intercultural competence	3.98	0.78

Results indicate that the students' identities were closely related to their views of authority. This was supported by the interview data that the participants approached collaborative learning and seeking guidance from the teachers with positive attitudes. Moreover, the participants regarded the teacher's role as the authority of knowledge transmission. During the four week's training, although they used the virtual reality classrooms and video editing software quite often, most of them relied heavily on the teachers' help and focused on language learning rather than creativity and critical thinking. Furthermore, 13 students mentioned that they had improved their intercultural competence. As Ruisheng said,

“participating in the speech contests has helped me appreciate the beauty of the Chinese poems and make connections with the current situation. ‘No clouds will block the sun and no way can the winter slow down the pace of the spring’. Salute to all those who have joined the fight against the pandemic! ((smile and confident))” (Interview, 2020-12-21).

From an ecological learning standpoint, Ruisheng positioned herself both in the local context of the speech event and in the global context of fighting against COVID-19. The analysis of the students' identities shows the important role of identity in language learning contexts (Klimanova & Dembovskaya, 2013).

## 4. Conclusions

In this study, the researcher explored the dynamics of identity in a Chinese teaching context. Results show that the participants have not only improved their skills in technology and presentations but also enhanced their cultural sensitivity. More importantly, they had constructed a variety of identities in the local and global contexts, which was reflected in the students' learning activities, including presentation training activities and the speech contests.

The findings provide supporting evidence for the complicated relations between language learners and their learning communities. As learners of Chinese take greater ownership of the language and redefine the learning communities, online

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and offline, researchers and educators should reconsider the role of economic, sociocultural, and political factors in learners' identity construction and negotiation in natural settings.

## 5. Acknowledgments

I would like to thank the research fund (Grant No: BUPT-SH-SPRC-202101) for supporting this research.

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# Using learner data from Duolingo to detect micro- and macroscopic granularity through machine learning methods to capture the language learning journey

Belinda Chiera<sup>1</sup>, Branislav Bédi<sup>2</sup>, and Rina Zviel-Girshin<sup>3</sup>

**Abstract.** Modern language learning applications have become ‘smarter’ and ‘intelligent’ by including Artificial Intelligence (AI) and Machine Learning (ML) technologies to collect different kinds of data. This data can be used for analysis on a microscopic and/or macroscopic level to provide granulation of knowledge. We analyzed 1,213 French language learner data over a 30-day period, publicly available from Duolingo, to compare the progression of individual learners (microscopic granularity) and large groups of learners (macroscopic granularity). Using network modeling, we compared patterns of individual learners against one another and that of a learning community and determined what groups of learners typically practice across communities. Preliminary results suggest how applications for L2 learning can be designed to create an optimal path for learning.

**Keywords:** artificial intelligence, granularity, language learning journey, machine learning.

## 1. Introduction

In the past ten years, an increasing number of language learning applications have become ‘smarter’ and ‘intelligent’ by including features from both AI and ML. Both technologies enable collecting different data types for analysis on a microscopic and/or macroscopic level. Such analysis is called granularity, with microscopic

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**How to cite this article:** Chiera, B., Bédi, B., & Zviel-Girshin, R. (2022). Using learner data from Duolingo to detect micro- and macroscopic granularity through machine learning methods to capture the language learning journey. In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 58-64). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1435>

granularity focusing on individual learners while macroscopic granularity compares large learner groups. This article explores both granularities and provides insights into a language learning journey by analyzing a sample of French language learner data. We focus on identifying and contrasting common patterns of learning behavior for insight into learners experiencing either exceptionally good or poor progress.

Many learners engage and possibly re-engage with a language learning program over time, in the pursuit of learning a target language (L2). In the majority of ‘smarter’ or ‘intelligent’ language learning applications, AI/ML technologies learn about, e.g. a learner’s errors, engagement, time and program usage, mistakes in specific exercises, and so forth. Programs with AI/ML technologies collect data on individual learners performing similar actions over time yet resulting in varying levels of language competency. Insights are achieved through learning analytics, or microscopic granulation, to influence a participant’s motivation and improve learner behavior to keep the learner actively engaged (Greller, Ebner, & Schön, 2014; Hai-Jew, 2014). Results from macroscopic granulation can utilize all sources of learners’ actions to create an optimal path for learning (Tang, Peterson, & Pardos, 2016). Such granularity helps to design lessons in learning systems to become more digestible (Jasnani, 2013), i.e. less challenging in terms of the required competences, e.g. time management, learner’s self-regulated learning, and self-organization (Lackner, Ebner, & Khalil, 2015).

## 2. Method

We used data generated by 1,213 French language learners over a 30-day period, publicly available from Duolingo (Settles, 2018), to demonstrate micro- and macroscopic granulation; chosen solely for the reason that this data is freely available. Each learner had a unique, anonymized ID with their session data including country of access, days in the program, time taken to complete a task, Part-Of-Speech (POS) tags, and whether the learner produced a correct answer. Three session types were recorded: *lesson*, *practice*, and *test* with three different activities, *listen*, *reverse tap*, and *reverse translate*. Reverse translate gives a learner a question in L1 to translate into L2 whereas reverse tap requires learners to construct an answer to a question in L1 using a small set of words (including distractors) in L2 (Settles, 2018). Most learners attempted all activities, however typically used two of three session types. *Reverse translate* was used by all learners while individuals selecting two activities predominantly also selected *listen*. Nearly all learners used *lesson* with several using *test*. A popular combination was *lesson* and *practice*.

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We created networks of node-edge pairs from the data. For microscopic granularity we investigated co-occurrence networks of an individual learner’s frequency of exposure to POS component combinations (NOUN, VERB, DET, etc.) and the vocabulary breadth encountered. For macroscopic granulation we grouped by country and created signed networks capturing correct and incorrect POS combinations, to provide insight into key lexical combinations learners found challenging or easier to grasp. The Jaccard index (Agresti, 2002) for network edge set similarity identified common elements between networks.

A mixed methodology compared individual performance against a community. The benefit of this approach is the formation of networks creating a multidimensional learning structure, even if learners do not engage directly with each other. These insights can benefit learners by gauging individual proficiency against common learning patterns of other individuals with a similar profile.

### 3. Results and discussion

Microscopic granulation (Figure 1) compares the typical time taken to complete learning activities of two learners, where learner (a) interacted with all activities over 25 days in the program, completing 752 tasks, whereas learner (b) used *reverse translate* only over 27 days and completed 131 tasks.

The POS graphs in Figure 2 indicate regular exposure to similar combinations (NOUN, VERB, DET, PRON) although learner (b) received greater exposure to ADJ, ADV, and INTJ components despite engaging less frequently. Vocabulary varied by learner. Figure 3 shows learner (a) predominantly practiced determinants *le* and *un* while learner (b) also practiced a third determinant, *les*.

Figure 1. Time taken to complete the learning activities for two learners

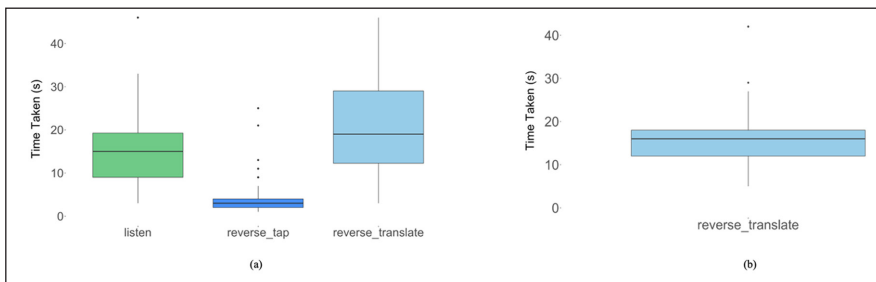


Figure 2. Exposure to POS by learner. Heavier lines indicate more frequent exposure

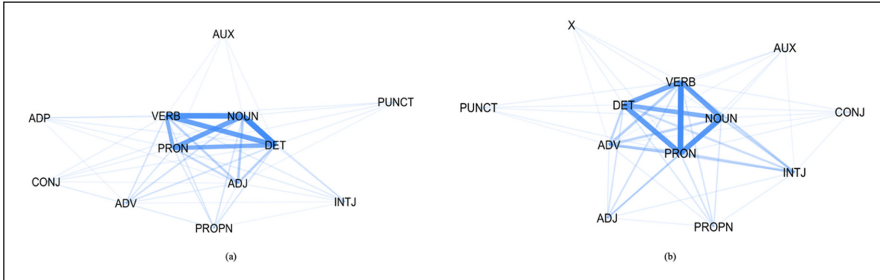


Figure 3. Vocabulary exposure by learner. Heavier lines indicate more frequent exposure

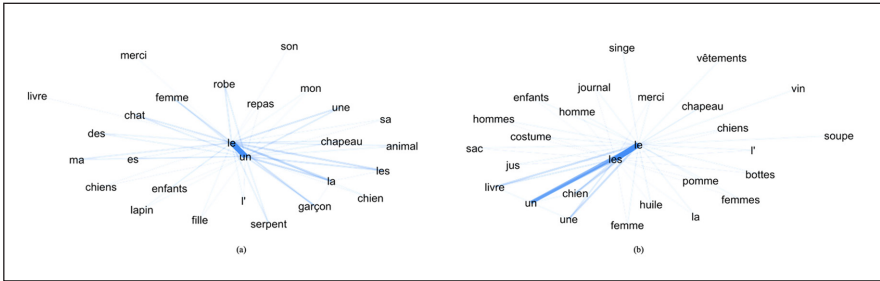
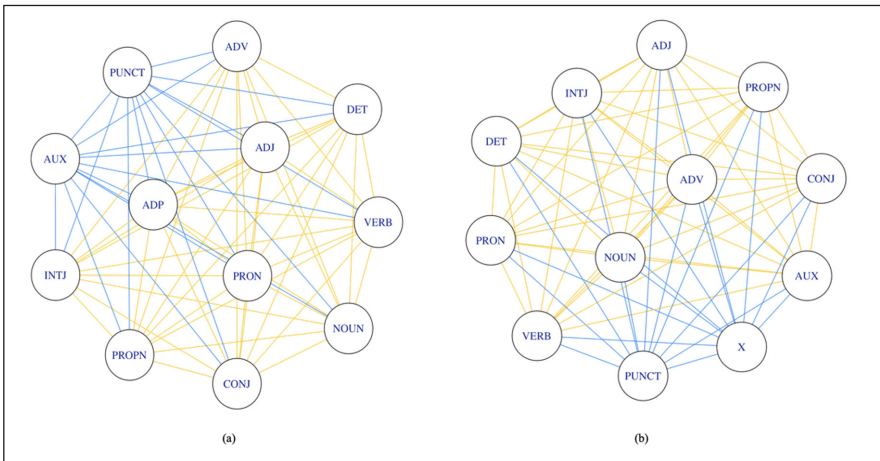


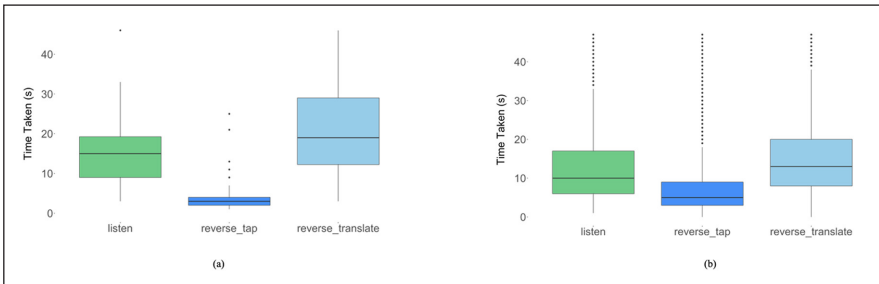
Figure 4. Signed networks indicating correct answers in blue and incorrect answers in yellow



In **Figure 4**, learners (a) and (b) are compared using signed networks to capture POS combinations. The learners answered correctly on average (blue) and incorrectly on average (yellow). Although learners were exposed to different vocabulary (**Figure 3**) and training activities, the data indicated similar proficiency. It could be postulated that learner (a) had less prior language exposure, while learner (b) engaged with the learning program to refresh their knowledge. The Jaccard index reported 71% commonality between the learners, supporting similarities in learning outcomes.

Results from macroscopic granulation can potentially be implemented as part of a language learning platform to provide a sophisticated learning mechanism for learner agency, to enable a language learner to compare their progress with that of their peers. For example, macroscopic granularity may alert a learner to limited variability in exposure to key language components when compared to their peers, which would encourage the learner to request more advanced learning modules. A mixed methods approach (**Figure 5**) compares learner (a) with all learners from the same country of access (b), to inform expected proficiency of an individual, based on country of access. Learner (a) is typically faster with *reverse tap* than other learners from the same country, however, takes typically longer with activities such as *reverse translate*, with extreme values comparable to those of the learner community.

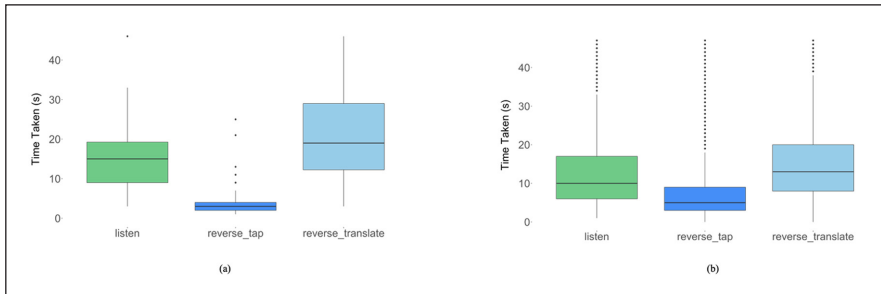
Figure 5. Time taken to complete the learning activities from an individual learner (a) and all learners from the same country of access (b)



In **Figure 6**, learners in countries (a) and (b) are compared. Country (a) learners are typically quicker with *reverse tap* however typically slower otherwise. Such insights could inform the language learning platform how to adjust content and challenges such that learners from country (a) could be encouraged to practice *listen* and *reverse translate*, whereas learners from country (b) could be encouraged to engage with *reverse tap* tasks. These recommendations could

be implemented within the language learning tool, thereby allowing learners the opportunity to take responsibility along their language learning journey by evaluating their own progression against a community of peers of interest.

Figure 6. Time taken to complete the learning activities between learners accessing the program from countries (a) and (b)



## 4. Conclusions

This article explored microscopic and macroscopic granularity to demonstrate that learner data accessed at individual and group levels can provide insights into assessing an individual's learning journey, to allow supportive learning advice that can be auto generated when combined with more sophisticated iterations of this analysis. Having insight at a micro-granular level allowed a comparison of learners to uncover individual progression relative to engagement with the language learning platform. Macro-granular level analysis allowed for a complementary comparison at a community level, to allow assessment of the individual's performance against a community of peers of interest, as well as the ability to compare communities with one another.

Limitations of the current study include the investigation of a single data set comparing English and French users and the inability to characterize learners beyond their country of access, which limits the potential to compare community structures. Future research already underway considers the exploration of more than one data set to provide granularity across multiple languages of interest. To support learner characterization, open-source applications and those supported by crowdsourcing are encouraged to make richer datasets publicly available to researchers who are interested in designing new, or improving existing, applications.

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# Building the future by looking to the past: the evolution of research strands in influential CALL papers

Yazdan Choubsaz<sup>1</sup>, Alireza Jalilifar<sup>2</sup>, and Alex Boulton<sup>3</sup>

**Abstract.** To trace the evolution of research strands in published Computer Assisted Language Learning (CALL) papers over time, a corpus of 426 highly-cited papers in four major CALL journals (*ReCALL*, *CALL*, *LL&T*, and *CALICO Journal*) was compiled and coded using NVivo 12. All identified aspects of technology-mediated language learning and teaching were collected to produce a comprehensive list of 690 recurring research strands and then, by adopting a constant comparison method, were merged to form 119 unique research strands. The top 10 alone represent almost half of all research strands: Computer-Mediated Communication (CMC), writing, vocabulary, feedback, evaluation, learning environment, telecollaboration, design, speaking, and grammar. This paper provides the rationale for the study along with the methodology for data collection and analysis, with a particular focus on the dominant and intermediary strands to inform future CALL publications.

**Keywords:** CALL research, CALL evolution, research strands, corpus analysis.

## 1. Introduction

Since its inception, CALL has been widely adopted to support learning, assess learners' knowledge of language skills, and assist with data collection/analysis for both classroom-related and beyond-the-class inquiry. With the rapid development of CALL over the years, CALL-oriented journals have emerged and expanded to invite their readers to keep up with the pace of technological advances through

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**How to cite this article:** Choubsaz, Y., Jalilifar, A., & Boulton, A. (2022). Building the future by looking to the past: the evolution of research strands in influential CALL papers. In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéсны, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 65-70). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1436>

academic Research Articles (RAs), attesting to the influence of CALL research (Gillespie, 2020).

These CALL papers, combined with other academic genres such as books and book chapters, master's theses, and doctoral dissertations, as well as conference proceedings, have had a substantial role in shaping the history of CALL research. To trace part of that history, this narrative review charts the evolution of research strands in highly-cited CALL RAs. The main objective of the study is to concentrate on the past and present of CALL research strands, build on their diversity, and accordingly propose avenues for the future of researching CALL.

## 2. Method

The pool of data consists of all 2,397 RAs published in English in four major CALL journals: *CALL*, *ReCALL*, *LL&T*, and *CALICO Journal*, from their first appearance up to and including 2019. A novel approach pinpointed the top 15% of highly-cited RAs based on Google Scholar (for more details see Choubsaz, Boulton, & Jalilifar, 2020; Choubsaz, Jalilifar, & Boulton, 2021), providing greater focus in the final corpus of representative high-impact CALL papers. A coding scheme was then developed for recording the existing research strands. As extracting, coding, and merging research strands involves a degree of interpretation, we followed Riazi, Shi, and Haggerty (2018) in opting for a data-driven thematic approach, coding the data by drawing on the actual words of the authors as much as possible. To add objectivity and consistency, 10% of the RAs were coded in two separate rounds by two independent coders for an inter-rater  $r$  of 89.8. The analysis was also complemented by substantial use of computer-assisted corpus analysis tools (i.e. NVivo 12 and AntConc) to facilitate the coding of the research strands.

## 3. Results and discussion

The diverse aspects of CALL and the multiple research strands in each study posed major challenges. Therefore, to attain a high level of granularity, an exhaustive list of research strands was compiled, including all identified aspects of language teaching and learning (initial coding); 690 recurrent research strands were collected and fed into NVivo 12 and AntConc for a detailed analysis. The strands were later manually merged by adopting a constant comparison method (focused coding). By taking account of the technologies adopted as a separate

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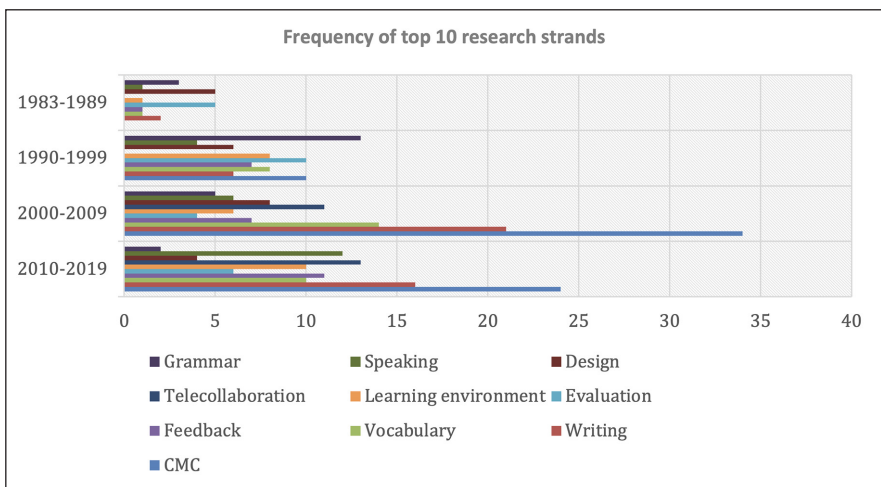
context-related sub-theme, the strands identified in our study truly reflect the primary research areas in high-impact CALL RAs and are not overrepresented by technology-related themes; 119 unique research strands were thus identified. Due to space constraints, only the top ten and the 27 intermediary strands are discussed here as they have appeared in at least seven studies over almost four decades of researching CALL.

*Dominant research strands.* As illustrated in Table 1, the top ten characterize nearly half of all the research strands over the four time periods under investigation.

Table 1. Top 10 CALL research strands across four time periods

(≥3%)	1983-1989	1990-1999	2000-2009	2010-2019	Total
CMC	-	10	34	24	68 (9.8%)
Writing	2	6	21	16	45 (6.5%)
Vocabulary	1	8	14	10	33 (4.7%)
Feedback	1	7	7	11	26 (3.7%)
Evaluation	5	10	4	6	25 (3.6%)
Learning environment	1	8	6	10	25 (3.6%)
Telecollaboration	-	-	11	13	24 (3.4%)
Design	5	6	8	4	23 (3.3%)
Speaking	1	4	6	12	23 (3.3%)
Grammar	3	13	5	2	23 (3.3%)
Total	19	72	116	108	315 (45.6%)

Figure 1. The evolution of top research strands across four time periods





The most dominant research strands are CMC (9.8%), writing (6.5%), and vocabulary (4.7%). One of the main findings is that although the top ten strands have been the focus of CALL research over time, some of them seem to have lost popularity in the last decade, a fact that is noticeable with the decline in entries from 116 to 108 RAs during 2010-2019 (see Table 1 and Figure 1 above). The other findings can be the arrival and increased popularity of telecollaboration in the last two decades and the constant rise of speaking.

*Intermediary research strands.* The 17 mid-frequency strands (Table 2) constitute almost one third of the total (213, 30.8%); together with the top ten, they represent 76.4% of the overall data set. However, there is a major difference: with the exception of reading, teacher education, and studies focused on error analysis/correction/diagnosis, which see an increase from the second to third time period and then a decline in the fourth, most of the research strands in this category have remained popular or increased over time.

Table 2. Intermediary CALL research strands across four time periods

(1% – 2.9%)	1983-1989	1990-1999	2000-2009	2010-2019	Total
Task	1	1	10	9	21 (3%)
Technology effectiveness	2	5	2	9	18 (2.6%)
Listening	2	3	6	4	15 (2.1%)
Proficiency	1	1	5	8	15 (2.1%)
Learner variables1	-	1	4	10	15 (2.1%)
Teacher education	-	1	8	5	14 (2%)
Reading	2	3	7	2	14 (2%)
Perception	-	1	4	9	14 (2%)
Learner autonomy	-	1	1	11	13 (1.8%)
Error2	1	8	2	2	13 (1.8%)
Technology affordances	-	-	3	8	11 (1.5%)
Culture	-	3	1	5	9 (1.3%)
Pronunciation	-	4	2	3	9 (1.3%)
CALL program	4	4	-	1	9 (1.3%)
Glosses	-	1	5	2	8 (1.1%)
Learning strategies	1	2	2	3	8 (1.1%)
CALL research	-	2	3	2	7 (1%)
Total	14	41	65	93	213 (30.8%)

Note. 1. Behavior, attitudes, engagement, self-efficacy, performance, socialization.

Note. 2. Analysis, correction, diagnosis.

Identifying 119 research strands (out of 690 recurrent strands in our collection) complements similar syntheses like that of [Lim and Aryadoust \(2021\)](#) who established seven major research clusters in 11 CALL journals. However, our synthesis is distinctive in offering a bird's-eye view of the research strands reflecting all identified aspects of language teaching/learning.

## 4. Conclusions

To conclude, this study charts the evolution of research strands in highly-cited CALL papers over time. Similar to the findings of [Gillespie \(2020\)](#), the most central strands over four decades of researching CALL have been CMC (9.8%), the four language skills, along with the essentials of first/second language learning such as vocabulary (4.7%), feedback (3.7%), evaluation (3.6%), telecollaboration (3.4%), design (3.3%), and grammar (3.3%); in other words, classroom-related research areas plus physical and virtual learning environments still inform the research strands after four decades.

Additionally, the increasing breadth of research strands informing the field can be observed in the most recent time periods, when new strands such as collocations, learning outcomes, and identity practices have emerged and been addressed in special issues of CALL journals in the form of position and review papers. In the light of narrative review, we found that under-researched strategic research strands such as CALL and ethics and cultural CALL ([Gillespie, 2020](#)) need further investigation.

Moreover, CALL researchers have recently tended to move toward sophisticated strands and interdisciplinary projects in the field of computer sciences, including eye-tracking technology and robot-assisted language learning. The shift toward such sophisticated strands necessitates the adoption of integrated methodologies, complex designs, and well-established theories so that CALL research can reflect its current interdisciplinary state ([Hubbard & Colpaert, 2019](#)).

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# Ecological CALL: development of a self-location tool for attuning to the ‘chorus of voices’

Rhonda Chung<sup>1</sup> and Walcir Cardoso<sup>2</sup>

**Abstract.** This study reports on the development of *Parlure Games* and explores its pedagogical affordances. *Parlure Games* is a multi-dialectal listening and decolonial conversation tool created to address the absence of variable speech (including speech markers associated with native speaker status, regional dialect, age, and race) found in the audiovisual material of adult French learners in Montréal, Canada. *Parlure Games* enables instructors to curate audiovisual content inclusive of different social and regional dialects, and supports learners in understanding variable speech while self-locating themselves in the process of learning a colonial language.

**Keywords:** Parlure Games, ecological CALL, variability in L2 input, French L2 learning.

## 1. Introduction

Nested within layers of macro-sized (national cultures, institutions) sociocultural ecosystems, the classroom is a microsystem where technology can transport learners from local to international contexts via Computer-Assisted Language Learning (CALL; Ramirez, Lafford, & Wermers, 2021). For language learners in urban settings, the ability to attune to local and international speakers is an important communicative skillset to develop for their social inclusion (Otsuji & Pennycook, 2011). However, the well-documented lack of social and regional variation found in language classrooms reflects an assimilative and colonial mindset toward learning (Macedo, 2019). Language learning engages multiple modalities (visual, aural, and emotional; Hardison & Pennington, 2021), and is enhanced when multiple speakers and varieties are encountered (Pisoni, Lively,

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**How to cite this article:** Chung, R., & Cardoso, W. (2022). Ecological CALL: development of a self-location tool for attuning to the ‘chorus of voices’. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouësnay, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 71-76). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1437>

& Logan, 1994), meaning that classrooms should strategically curate a curriculum inclusive of local and international varieties to encourage multimodal interaction in the Target Language (TL).

*Parlure Games* was created to address these issues, particularly the ‘invariable’ social speech markers (related to age, race, native speaker status, and regional dialect) found in the audiovisual material (TV shows, movies) that characterizes adult French Second Language (FSL) classrooms in Montréal, Canada (Chung & Cardoso, 2022). *Parlure Games* is a multi-dialectal listening and conversation tool designed to expose learners to variable TL speech and prompt critical conversations about learning a colonial language. Situated within stages one and two of Cardoso’s (2022) chronological framework for conducting interactive CALL research, this paper (1) describes the development of *Parlure Games*, and (2) explores the tool’s pedagogical affordances.

## **2. Stage 1. *Parlure Games*: development of an ecological, variable CALL tool**

Ecological perspectives do not view language as input or output, rather language provides opportunities for learners to attune to their sociolinguistic environment through interaction with human and non-human agents (i.e. technology, signs), either enabling or weakening linguistic relationships (Lafford, 2009). These multimodal interactions enhance the “chorus of voices” that constitute learners’ communicative repertoires (Tarone, 2007, p. 842), and proficiency is measured by performing increasingly complex interactive tasks (Lafford, 2009). Ecological learning, therefore, focuses on how language is used in the nested ecosystems, which means thinking both locally and globally about language teaching and learning. Drawing on ecological systems theory, van Lier (2011) outlined ten characteristics of an ecological language learning classroom (Table 1) which is principled on supporting learners’ agency development as they self-locate their identities in the nested ecosystems.

To explore the interconnected macro and microsystems of the linguistic landscape, learners require robust perceptual systems. Empirical evidence from laboratory-based High Variability Phonetic Training (HVPT) suggests that second language learning is enhanced when training includes: (1) multiple human voices; (2) natural speech; (3) at least five distinct talkers (e.g. each representing a unique dialect); (4) multiple exposures to the stimuli; and (5) immediate feedback using forced-choice identification tasks (e.g. choose answer A or B; Pisoni et al., 1994).

HVPT is consistently linked with greater perceptual acuity, more target-like TL pronunciation, and learning that generalizes to new speakers and novel linguistic features (Thomson, 2018). These five characteristics form the theoretical pillar for curating highly variable audiovisual content for the language classroom, and are operationalized in *Parlure Games*.

### 3. Stage 2. *Parlure Games*: pedagogical affordances

Variation is essential for robust language learning, and FSL classrooms are consistently criticized for the lack of regional and social variation in their curriculum, often favoring standardized varieties reflective of middle-class white speakers (Macedo, 2019). The use of mass media (e.g. TV shows, films) in the classroom contributes to monolingualism, as it often features invariable standardized speech from supposedly ‘unaccented’ speakers (Lippi-Green, 2012). Because invariability inhibits robust language learning, *Parlure Games* was designed to disrupt these monolingual orientations by sourcing its audiovisual material from non-mass media platforms (e.g. YouTube, TikTok). These online videos often offer captioning, which supports bimodal learning (i.e. simultaneously reading while listening).

Figure 1. Interface of *Parlure Games*



A *Parlure Games* expedition includes local ‘road trips’ within a region (e.g. province, city), or international ‘transatlantic voyages’ to previously or currently colonized territories within the *Francophonie* (see Figure 1 above). One expedition is comprised of five destination points pinned onto a Google map, each containing a hyperlink to a publicly available video. Following the characteristics of HVPT training, each video represents the natural speech of at least five distinct talkers, and the playback setting allows for multiple exposures to the stimuli. After listening to each video, learner groups collectively answer a hyperlinked quiz (with automated feedback) related to content and social speech markers. Finally, group discussions are posed, prompting critical conversations

about learning a colonial language, facilitating learner engagement with the macro and micro realities of learning French, thus supporting an ecological CALL pedagogy. Table 1 illustrates how *Parlure Games* can promote an ecological language learning classroom based on van Lier's (2011) framework.

Table 1. Promoting an ecological language classroom with *Parlure Games*

Ecological pedagogy	Definition	Parlure Games
1. Relationality	Examines the interconnectedness of linguistic systems from a micro/macro level	Online map features audiovisual material of local and international varieties of Francophonie communities
2. Context	Language use is specific to sociocultural contexts involving in/animate interlocutors	Geographical and sociocultural contexts are explored through online videos and discussed in groups
3. Patterns/Systems	Emerge from language use not prescriptive rules	Exposure to authentic (i.e. non-mass media) speech
4. Emergence	Multimodal communicative repertoire is constantly re-organizing itself	Audiovisual material and group discussions engage the multimodal communicative repertoire
5. Quality	Relevant to learners with real-world implications that engage both the intellect and emotions	Content and discussion questions enables learners to check their comprehension and express their opinions
6. Value	Cultivate a moral stance toward language learning	Discussing French's global reach raises ethical questions of learning a colonial language, cultivating a moral stance on users' FSL learning
7. Critical Perspective	Examining institutional structures and supporting transformative education	Supports learning how to perceive the language and critically discuss these perceptions with classmates
8. Variation	Encourages embodying a linguistic identity among the many varieties available	Spotlights non-standardized varieties enabling learners to choose which linguistic identity they wish to embody/reject
9. Diversity	Promotes multilingual learning over monolingual approaches	Reflects a multi-dialectal approach to learning over a standardized one
10. Agency	Inhibits or enables sociolinguistic movement through an ethical education	Learners traverse the globe listening to different speakers and discussing content, supporting perceptual learning and critical reflection

## 4. Concluding remarks

The goal of an ecological CALL curriculum is activity-based learning around, with, and through the use of technology (Cardoso, 2022), providing learners with opportunities to hone their attunement skills, cultivate learner agency, and socially engage with the TL (van Lier, 2011). *Parlure Games* enables language instructors to curate an audiovisual curriculum inclusive of speakers from diverse social and regional backgrounds, and supports learners in navigating their multilingual environment while connecting them to ecosystems greater than themselves.

## 5. Acknowledgments

We would like to thank the *Fonds de recherche société et culture du Québec* for funding this research.

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# Pre-service teacher education and the integration of mediation, technology, and plurilingualism

Giulia Ciaramita<sup>1</sup>

**Abstract.** Although some research has been conducted on the importance of mediation in language learning and teaching (Dendrinios, 2006; González-Davies, 2020; Piccardo, 2012, 2020; Scarino, 2016), there is still scarce research on the integration of plurilingualism, mediation, and technology. Through qualitative and quantitative methodology, this paper investigates teachers' abilities in Italy and Spain to integrate plurilingualism, mediation, and technology. A survey has been distributed in order to explore teachers' attitudes towards the use of Information and Communication Technologies (ICTs) and their awareness of the definition and importance of mediation. Furthermore, some mediation tasks performed by teachers in which they had to integrate mediation, plurilingualism, and technology were analysed.

**Keywords:** teacher education, mediation, ICTs, language learning, TEMPLATE project.

## 1. Introduction

Mediation can be considered as the act of language that makes “communication possible between persons who are unable [...] to communicate with each other directly” (Council of Europe, 2020, p. 34). This definition is provided by the CV, which also underlines the relationship between mediation and plurilingual and pluricultural competences. Mediation was already present in the Common European Framework of Reference for languages (CEFR), published in 2001 (Council of Europe, 2001), but it was not sufficiently developed: the only two mediation strategies were translation and interpretation (Piccardo, 2020). The

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**How to cite this article:** Ciaramita, G. (2022). Pre-service teacher education and the integration of mediation, technology, and plurilingualism. In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 77-82). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1438>

Council of Europe (2015) decided to further develop the topic in the CV since nowadays societies are characterised by cultural and linguistic diversity and, therefore, the citizens need to be able to mediate.

After the publication of the CV, some research has been conducted on the importance of mediation in language learning and teaching. Some academic research focuses on the presence and role of mediation in the CEFR (Piccardo, 2012, 2020), while other studies have been conducted on translation as a mediation strategy (González-Davies, 2020; Scarino, 2016). Other research focuses on the role of mediation in language certifications (Dendrinos, 2006) and some ICT tools for teaching mediation have been identified (Cinganotto, 2020). Nevertheless, there is still scarce research on the integration of plurilingualism, mediation, and technology. For this reason, this paper aims at investigating the ability of teachers in Italy and Spain to integrate plurilingualism, mediation, and technology. It also aims at comparing the Italian and Spanish results.

## 2. Method

In order to investigate teachers' awareness of mediation and their ability to integrate it with plurilingual and pluricultural competences and with ICTs as well, data were collected during two occasions:

- 30/11/2021, Universitat Jaume I, Spain (workshop on mediation for pre- and in-service teachers, held within the multiplier event of the TEMPLATE project, <https://templateplurilingualism.eu/>);
- 23/02/2022, Università degli Studi di Torino, Italy (workshop for pre-service teachers proposed within the university course 'Approaches to Language Teaching').

In Spain, 52 participants took part in the multiplier event. Most of them (71%) were pre-service teachers. The remaining participants were mostly in-service teachers (19%). On the other hand, all the 23 Italian participants were pre-service teachers. The participants are part of the TEMPLATE project and they are mainly pre-service language and/or content and language integrated learning teachers.

For these workshops, a survey was designed through Google forms in order to explore teachers' awareness of the definition and importance of mediation, and their ability to recognise mediation exercises. Indeed, after some questions about

metadata (age, occupation, years of experience), the participants were asked to define mediation, to explain its importance, and to recognise some mediation exercises.

In order to collect qualitative data, some tasks performed by the participants were analysed. In these tasks, they had to integrate mediation, plurilingualism, and technology by adapting some mediation exercises to a digital context, through the addition of some ICTs and motivating the reason for selecting the tools. Figure 1 below is an example of a task.

Figure 1. Mediation Task<sup>2</sup>: Alex and Lara will soon be two new English students in your class. You read their description (in English) and you orally describe them to your class using Spanish



The exercise is a cross-linguistic mediation task: the students have to mediate orally an English written text, using Spanish. In addition to the verbal input, a visual input was provided. The teachers participating in the workshop had to adapt this task to a digital context, simply by listing some ICTs that could be included and explaining the added value of the inclusion of the tools selected.

2. Created for this research, using text and images retrieved from <https://www.pinterest.es/pin/who-is-who-language-english-gradelevel-elemental-school-subject-english-as-a-second-language-esl-mai--452330356328865065/>

### 3. Results and discussion

The survey results show that most of the Spanish participants (92%) knew the definition of mediation, and 96% of them were aware of the necessity to include it in the curriculum for educational and social reasons. Nevertheless, most of them (63%) did not always recognise mediation exercises. On the other hand, in Italy, a smaller number of pre-service teachers (74%) knew the meaning of mediation and 65% were aware of the importance of including mediation in language courses, but 43% of them were not always able to recognise mediation exercises. The quantitative data just mentioned are summarised in [Table 1](#).

Table 1. Quantitative results

	Percentage of teachers able to define mediation	Percentage of teachers aware of the importance of mediation	Percentage of teachers not always able to recognise mediation exercises
Spain	92%	96%	63%
Italy	73%	65%	43%

Analysing the tasks performed by the Spanish participants, it emerged that they were able to include ICT tools in existing tasks. They included ICTs in various phases of the task and for different reasons:

- for pre/post-task activities (e.g. hangman to revise vocabulary, interactive exercises to learn the vocabulary);
- for the task itself (e.g. Canva to prepare a new infographic, Filmora to prepare a video, Pixton to create comics, Twitter to summarise the text, Grammarly to correct the text, online dictionaries to check vocabulary);
- to facilitate collaboration (videoconference, shared documents).

Furthermore, they often motivated the use of technology by referring to factors not linked to facilitating mediation, such as: motivation, acquisition of digital skills, preparation for the job market and academic studies. Italian participants also proved to be able to integrate the use of ICTs. Similarly to the Spanish participants, they included ICTs:

- for pre/post-task activities (e.g. Mentimeter to elicit vocabulary, YouTube/Quizlet/Kahoot/British council website to present/explain vocabulary, collocations, and sentence structure);

- for the task itself (e.g. Instagram/Prezi to make the text more visual, Grammarly to correct the text, online dictionaries, programmes for writing effective emails); and
- to facilitate collaboration (videoconference, shared documents, Google Drive, Google Classroom).

When motivating their choices of ICTs, they never referred to mediation but to other aspects such as: using tools closer to younger students, increasing amusement in learning, interaction and collaboration, and facilitating the production of correct texts.

## 4. Conclusions

In both Italy and Spain pre-service teachers are aware of the definition of mediation. Nevertheless, Spanish pre-service teachers are more aware of the importance of mediation. In both countries, the participants associate the concept of mediation with the educational context and language learning. Even though their theoretical knowledge about mediation seems of a good level, when it comes to practise some of them encounter difficulties. Indeed, many teachers (63% in Spain, 43% in Italy) are not always able to identify mediation exercises.

Concerning technology, in both countries the attitude is positive, and pre-service teachers consider technology as an added value to the task, demonstrating to be able to integrate technology in language teaching, but not always focusing on the facilitating role that it can have in mediation tasks. Considering the findings mentioned above, it is possible to conclude that teachers still need to be trained to be able to recognise mediation exercises and to integrate the use of technology in mediation tasks, in order to use these tools to facilitate mediation.

## 5. Acknowledgements

The present research has been funded by the European Erasmus+ K201 project TEMPLATE (<https://templateplurilingualism.eu/>).

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# Intercultural communicative competence development through synchronous virtual exchange

Sibel Crum<sup>1</sup> and Emrah B. Basoglu<sup>2</sup>

**Abstract.** Virtual Exchange (VE) in second language education refers to a technology-enabled, interactive, intercultural experience that is designed to increase learners' intercultural communicative competence and performance. In this paper the findings of a bilingual (English/Turkish), synchronous video communication project among 31 US and Turkish college students are presented. Thematic analysis was used in this study. The results show that the VE – to a certain extent and similarly to other research studies – achieves the learning objectives of not only increased cultural awareness and communicative competence about the target culture and language itself but also the growth of factual knowledge about diverse topics that the students are interested in learning.

**Keywords:** telecollaboration, virtual exchange, intercultural communicative competence, less commonly taught languages.

## 1. Introduction

As communicative competence alone is not sufficient for foreign language learning, the goal of foreign language education is to develop Intercultural Communicative Competence (ICC) skills and cultural awareness to stay relevant in the real-life context of the target language (O'Dowd, 2021; Thorne, 2006). Byram (1997, as cited in López-Rocha, 2016) suggests that an individual who has developed ICC has been defined as someone who builds “relationships while speaking in the foreign language; communicates effectively, taking into consideration his own and the other person's viewpoint and needs; mediates interactions between people of different backgrounds, and strives to continue developing communicative

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**How to cite this article:** Crum, S., & Basoglu, E. B. (2022). Intercultural communicative competence development through synchronous virtual exchange. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 83-88). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1439>



skills” (p. 107). In recent years, there has been an increasing amount of research investigating the role of VE practices on second language learners’ intercultural competence (Bailey & Gruber, 2020; Lewis & Qian, 2021). However, there has been a scarcity of published research and conference presentations documenting the experiences of Less Commonly Taught Languages (LCTLs) students in the Computer Assisted Language Learning (CALL) field in general and VE field specifically (Ward, 2021).

This research project has brought together US college students learning Turkish and Turkish students learning English to increase their intercultural and linguistic competencies. Realizing that less than 2% of all undergraduates in the US have the opportunity to study abroad (Feigner, 2017), the researchers have collaboratively developed, designed, and implemented this project to bring the global experience to Turkish and English language learners, thus developing their linguistic and intercultural competence.

## 2. Method

The purpose of this research is twofold: (1) to understand the self-perceived effectiveness of participating in VE and (2) to form a basis for future VE research in LCTLs.

A total of 31 US and Turkish college students from various degree programs participated in a 50-minute tele-tandem (English/Turkish) synchronous Zoom video communication project in the 2021 and 2022 spring semesters. The US students were partnered with different Turkish students for each VE session. The once a month VE sessions were conducted during the US students’ class sessions and hosted three to four pairs of students. After each synchronous VE session, the US and Turkish students were asked to respond to an open-ended online survey to reflect on their interactions; 104 surveys with open-ended responses were collected over two consecutive spring semesters. The students were requested to provide examples of areas that VE has contributed to their speaking competence and give specific examples in those areas of development. The students were also asked to reflect on their overall perceptions of the benefits of participating in a live VE session.

Prior to the VE sessions, the rules of effective virtual communication were clearly discussed with the students. The students were provided with globally engaging and authentic discussion topics, such as holidays, food culture, college courses,

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career prospects after college, and the job market. These topics were tied to the course curriculum to maintain the rhythm of academic connection. During their exchange, the students were also given ample space to talk about topics of mutual interest.

Thematic analysis was used in this study (Creswell, 2014). The students' open-ended statements were initially coded and the identified data were then categorized into themes to correspond to the research questions below.

- RQ1: What are the common discussion topics among Turkish and American college students (aside from the instructor-designated topics) during real-time VE?
- RQ2: Do students attribute gains in their language competencies to the real-time VE?
- RQ3: In what areas do the students report the real-life VE benefits for their language competency development?

### **3. Results and discussion**

The results show that the VE, to a certain extent and similar to other research studies (Madden & Ashby, 2021), achieves the learning objectives of not only increased cultural awareness and competence about the target culture itself, but also the growth in factual knowledge about diverse topics that the students are interested in learning.

For RQ1, when the students were asked to report the content of their discussions during the real-life VE, besides discussing the pre-set topics that were assigned by their instructors, the students also took the initiative to actively engage in various topics of mutual interest, such as college, hobbies, places to visit, food, daily life, personal life, and post-college life.

For RQ2, when the students were asked whether they attributed gains in their language competencies to the real-life VE, all 31 students responded 'yes', despite the challenges of meeting across a seven hour time zone difference.

For RQ3, a chi-square test of independence was performed to examine the relation between student target language and Theme 1 (self-confidence in speaking,

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**Table 1).** The relation between these variables was significant:  $\chi^2 (1, N=97)=4.52, p=.033$ . The inference is that Turkish students were not likely to report improved self-confidence in speaking English as a target language. Theme 1 accounts for 20.20% of the total coded comments.

A chi-square test of independence was performed to examine the relation between student target language and Theme 2, pronunciation improvement (**Table 1**). The relation between these variables was significant:  $\chi^2 (1, N=97)=5.02, p=.025$ . The inference is that Turkish students were likely to report improved pronunciation in speaking English as a target language, and the American students were not likely to report improved pronunciation in speaking Turkish. Theme 2 accounts for 23.33% of the total coded comments.

A chi-square test of independence was performed to examine the relation between student target language and Themes 3 (improvement in vocabulary) and 4 (speaking and fluency improvement, **Table 1**). The relationship between student target language and the variables of Themes 3 and 4 was not significant:  $\chi^2 (1, N=97)=0.31, p=.580$  and  $\chi^2 (1, N=97)=2.69, p=.101$ , respectively. There was no relationship between student target language and Themes 3 and 4. Themes 3 and 4 account for 20.71% and 22.73% of the total coded comments, respectively.

A chi-square test of independence was performed to examine the relation between student target language and Theme 5 (grammar improvement, **Table 1**). The relation between these variables was significant:  $\chi^2 (1, N=97)=7.78, p=.005$ . The inference is that Turkish and US students were not likely to report improved grammar in their respective target languages. Theme 5 accounts for 13.3% of the total coded comments.

Table 1. Self-reported gains in their language competencies to the real-life VE

	Value	df	Asymptotic Significance (two-sided)
Theme 1: Self-confidence in speaking	4.522	1	.033
Theme 2: Pronunciation improvement	5.020	1	.025
Theme 3: Vocabulary improvement	.306	1	.580
Theme 4: Speaking and fluency improvement	2.690	1	.101
Theme 5: Grammar improvement	7.779	1	.005

## 4. Conclusions

In this study, the self-perceived effectiveness of participating in real-time tele-tandem VE among college students from two countries with a seven-hour time difference was investigated, and an attempt was made to form a basis for future VE research in LCTLs that might help address the neglect of this topic in the literature and conference presentations. As the results indicate, the students proactively took the initiative to explore various themes and took charge of their own learning. The students who participated in VE attributed gains in their language competency to the real-life VE and reported language competency gains (to a certain extent) in five areas (self-confidence in speaking, pronunciation, vocabulary, fluency, and grammar). Future research could include VE partnerships among other institutions and languages and increase the number of students and the amount of time allocated for the real-time exchange.

## 5. Acknowledgments

This study was supported by Indiana University, The College of Arts and Sciences, and the Office of International Affairs foreign language grant to the first author.

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# ICALL ecosystems: making ICALL's intelligence both accessible and understandable

Jasper Degraeuwe<sup>1</sup> and Patrick Goethals<sup>2</sup>

**Abstract.** This paper presents a reflection on the design of an Intelligent Computer-Assisted Language Learning (ICALL) 'ecosystem', integrated into an online learning environment for Spanish as a Foreign Language (SFL). The innovative dimension of the ecosystem lies in its triple focus: apart from enabling users to create and use intelligent language learning materials, it also tracks their activities in the environment and provides them insights (e.g. through knowledge clips) into Natural Language Processing (NLP), the source of ICALL's 'intelligence'. The reflective analysis is carried out by means of a case study with 32 SFL students, who work with the ecosystem in a blended writing course focused on vocabulary learning, lexical ambiguity, and Word Sense Disambiguation (WSD). Students' attitudes towards engaging in the ICALL ecosystem are gauged through a questionnaire, which revealed a statistically significant positive change in attitude after having completed the course. However, the results also show that enhanced insights into NLP and increased confidence in the computer as a learning assistant do not necessarily go hand in hand with an increased curiosity and a better user experience.

**Keywords:** ICALL, NLP, reflective analysis, user attitudes.

## 1. Introduction

With applications such as example sentence selection systems (Pilán, Volodina, & Borin, 2016) and exercise generation tools (Zanetti, Volodina, & Graën, 2021), the implementation of ICALL in language learning courses can be a valuable addition to the arsenal of teaching methods, for example as a complement to on-campus vocabulary learning activities (Ruiz, Rebuschat, & Meurers, 2021). Nevertheless,

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**How to cite this article:** Degraeuwe, J., & Goethals, P. (2022). ICALL ecosystems: making ICALL's intelligence both accessible and understandable. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 89-94). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1440>

using ICALL also comes with its limitations. Recognising lexically ambiguous items and distinguishing between their senses is one of those pending issues (Pilán et al., 2016), as the NLP-driven technique of WSD is not yet integrated in corpus query tools or in the development of computer-readable resources for didactic purposes, such as graded word lists. Additionally, it should be taken into account that, in order to get the most out of ICALL environments, end users (which may refer to students, teachers, or even textbook designers) should possess certain ‘technological metaskills’ (Schweinberger, 2021) that allow them to decide which queries are relevant and feasible to perform. In this study, we carry out a case study to analyse how both above mentioned aspects can be tackled by designing an ICALL ecosystem.

## 2. Method

### 2.1. Ecosystem design

Conceptually, the ecosystem should enable users to generate and use customised learning materials (**Aspect\_1**), as well as help them gain technological metaskills by stimulating their curiosity and promoting their autonomy (**Aspect\_2**). In the meantime, all activities of users who give their informed consent end up in a structured database, which can then be used for improving the NLP-driven methods integrated into the environment (**Aspect\_3**).

### 2.2. Case study design

The participants of the study are 32 SFL students enrolled in a third bachelor (B2+ level) Spanish writing course at Ghent University in Belgium. During the course, they work with the online learning platform of the Spanish Corpus Annotation Project<sup>3</sup> (SCAP; Goethals, 2018), which includes:

- a section on corpus consultation, in which users can perform targeted queries based on part-of-speech and lemma information and generate lemma lists with frequency and keyness values;
- a section on vocabulary learning, in which users can automatically generate customised vocabulary lists/glossaries and fill-the-gap exercises; and

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3. Publicly available version of the platform accessible through [scap.ugent.be](https://scap.ugent.be). Demo video of the in-house version available at [youtube.com/watch?v=RFalWEEZcVM](https://youtube.com/watch?v=RFalWEEZcVM)

- a collaborative section for research purposes.

Part of the course consists of completing a blended vocabulary learning module, which encompasses two on-campus classes and an online module on lexical ambiguity. During the classes, the students learn to use the corpus consultation and vocabulary learning functionalities of the SCAP platform (**Aspect\_1**). For the online module, they consider lexical ambiguity from the perspective of the computer by watching knowledge clips<sup>4</sup> and develop their own WSD models by making interactive exercises on lexically ambiguous vocabulary items in the collaborative section of the platform<sup>5</sup> (**Aspect\_2**). The responses to those exercises (see **Figure 1** for an example) are collected in a database and used to develop the actual WSD method integrated into the environment (**Aspect\_3**).

Figure 1. Example of interactive exercise on lexical ambiguity

**Ejercicio de desambiguación – Parte 2**

En la segunda parte del ejercicio, vas a llevar el desarrollo del sistema de WSD un paso más allá. Abajo te presentamos las 10 frases en los corpus de SCAP que son las más difíciles para predecir para el sistema en base a las 2 frases prototípicas clasificadas por ti en la primera parte del ejercicio. El objetivo es que ayudes al ordenador a resolver estos casos difíciles, para ver si puedes llegar a una mejor versión del modelo de WSD. Para ello, selecciona otra vez el significado correcto en el ejercicio abajo, o indica 'Otro / ?' si no estás seguro del significado al que pertenece la frase. Pero ten cuidado, esta vez el ejercicio no se corregirá, es tu responsabilidad pensar bien y ofrecer al sistema frases clasificadas correctamente. Al dar en el botón 'Mostrar gráfico', se mostrará un nuevo gráfico, en que se han añadido los vectores de las frases que acabas de clasificar.

frase	moneda extranjera	símbolo, eslogan	Otro / ?	Comentario
1) Y debajo habían incluido la <i>divisa</i> familiar: Vivitur ingenio , caetera mortis erunt.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input style="width: 100%;" type="text"/>

### 2.3. Questionnaire

To gain insights into the potential of the ecosystem, the students are administered an adapted version of the A-CALL questionnaire (Attitude towards CALL; Vandewaetere & Desmet, 2009) before and after completing the vocabulary learning module. The questionnaire contains fifteen eight-point Likert scale questions, each of them representing a specific attitude towards ICALL (see **Table 1**).

## 3. Results

**Table 1** reports the mean scores and standard deviation (SD) values of the 15 questions (four students failed to complete the module, which explains the

4. Complete video available at [youtu.be/-ev56uEpIkA](https://youtu.be/-ev56uEpIkA)

5. Demo video available at [youtube.com/watch?v=OjPWKEpYiAA](https://youtube.com/watch?v=OjPWKEpYiAA)



different value for  $n$ ). A paired samples t-test revealed a statistically significant ( $p=0.01$ ) difference, meaning that engaging with the ecosystem positively affected students' attitudes towards ICALL (as represented by the 15 average scores). However, the results also show that enhanced insights into NLP (Questions 1, 3, 5, and 9) and increased confidence in the computer as a vocabulary learning assistant (4 and 6) do not necessarily go hand in hand with an increased curiosity (2) and a better user experience (11).

Table 1. Questionnaire results, with scores on questions marked with (\*) being reversed

Nr	Question	Pre (n=32)		Post (n=28)	
		Mean	SD	Mean	SD
1	The computer is able to analyse the grammatical characteristics of words, and link words to their corresponding part-of-speech (noun, verb, adjective, etc.).	5.12	1.62	7.18	0.86
2	I am interested in knowing more about the technology which enables computers to automatically create vocabulary exercises and resources.	4.16	2.2	3.89	1.87
3	The computer only sees sequences of letters which are combined into words, it is not able to see meanings and concepts behind these sequences of letters.*	4.91	1.51	5.96	1.48
4	I have confidence in computer-created vocabulary exercises and tests.	4.69	1.31	5.86	1.3
5	If I introduce a large collection of texts on a certain domain into a specific application, I think that this application will be able to return a keyword list with the most typical words for the domain.	5.56	1.37	6.71	1.05
6	The computer is able to generate vocabulary exercises and resources tailored to my proficiency level.	5.34	1.21	6.68	1.22
7	The teacher's attitude and enthusiasm towards and knowledge of computer-assisted vocabulary learning determine to a large extent my attitude towards using computers for vocabulary learning purposes.*	3.22	1.77	3.54	2.12
8	Computer-assisted vocabulary learning offers more flexibility to learning vocabulary in Spanish.	5.53	1.5	5.61	1.89
9	The computer is able to analyse the syntactic structure of sentences, and assign the correct syntactic function (subject, direct object, etc.) to words.	4.53	1.27	5.61	1.47

10	Computer-assisted vocabulary learning is as valuable as traditional methods for vocabulary learning in Spanish.	4.28	1.49	4.82	1.49
11	I (would) like to learn Spanish vocabulary with the help of the computer.	5.28	2.1	4.89	1.91
12	I find it easier to accept an error committed by a language teacher, than an error committed by the computer. <sup>(*)</sup>	4.06	1.78	4.07	2.02
13	People who learn Spanish vocabulary through computer-assisted learning methods are less proficient in Spanish than people who learn Spanish vocabulary through traditional paper-and-pencil methods. <sup>(*)</sup>	6	1.93	6.29	1.41
14	Computer-assisted vocabulary learning is a valuable extension of traditional learning methods for vocabulary learning in Spanish.	6.09	1.47	6.07	1.74
15	Vocabulary exercises and resources created automatically by an application cannot contain errors. <sup>(*)</sup>	3.34	2.06	3.18	1.93
		<b>4.81</b>	<b>1.64</b>	<b>5.36</b>	<b>1.58</b>

## 4. Discussion and conclusions

In this paper we reflected upon the design of an ICALL ecosystem using a specific questionnaire as our survey instrument. Working with the ecosystem significantly improved students' attitudes towards ICALL, but this did not automatically mean that they also enjoyed working with the computer more, or that the ecosystem sparked their interest in learning even more about language technology. In other words, these preliminary findings highlight the area of tension between what students consider to be the value, quality, and/or potential of learning methods, and the user experience these methods provide. To analyse this phenomenon in more detail, we will organise a follow-up case study in the 2022-2023 academic year, in which we will evaluate a revised version of the ecosystem based on this year's results.

## 5. Acknowledgements

This research has been carried out as part of a PhD fellowship on the IVESS project (file number 11D3921N), funded by the Research Foundation – Flanders (FWO). Additionally, we want to express our gratitude to Dr Koen Plevoets, who provided support for the statistical analysis.

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# Does participating in a telecollaborative project foster the acquisition of apologies? Insights from the English for specific purposes context

Sofia Di Sarno-García<sup>1</sup>

**Abstract.** The aim of the study was to investigate whether telecollaboration is a suitable environment for the acquisition of the speech act of apologies. Participants were aerospace engineering students from the Universitat Politècnica de València (Spain) who performed six open role-plays to elicit apologies. The Control Group (CG, n=17) carried out the task in pairs with their Spanish classmates in a Face-To-Face (FTF) setting, while the Experimental Group (EG, n=7) conducted the task with first language (L1) or highly proficient speakers of English from the University of Bath (UK) through synchronous Zoom sessions. The results of the descriptive analysis revealed a higher tendency of improvement in the EG, which also used a higher number of strategies compared to the CG. Findings from the quantitative analysis carried out through an Eta coefficient revealed a significant correlation ( $r=.71$ ) between the number of strategies used and the modality where they were performed.

**Keywords:** synchronous computer-mediated communication, telecollaboration, cyberpragmatics, speech acts, apologies, English for specific purposes.

## 1. Introduction

Since Yus (2011) coined the term cyberpragmatics to describe “the online focus of pragmatics” (Orsini-Jones & Lee, 2018, p. 26), the interest in analysing the pragmatic implications of online encounters has increased, although the field of second language (L2) pragmatics in Computer-Assisted Language Learning

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**How to cite this article:** Di Sarno-García, S. (2022). Does participating in a telecollaborative project foster the acquisition of apologies? Insights from the English for specific purposes context. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 95-100). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1441>

(CALL) is still under-researched (Blyth & Sykes, 2020). Nevertheless, cyberpragmatics plays a crucial role in telecollaboration, and for that reason students in higher education should be trained on that to become global citizens (Orsini-Jones & Lee, 2018). Furthermore, telecollaboration can be beneficial for the teaching and learning of L2 pragmatics because it fosters learners' exposure to L2 pragmatic features (Belz, 2007; González-Lloret, 2021; Rafieyan et al., 2014).

Following the recommendation made by Blyth and Sykes (2020), this paper focuses on L2 pragmatics and digitally-mediated interaction through video conference sessions. Specifically, we focused on the speech act of apologies, which are a characteristic of English-speaking societies (Leech, 2014). In fact, according to Halenko (2021),

“research shows producing pragmatically appropriate language in a British context may be particularly problematic for international students from positive politeness cultures (Brown & Levinson, 1987) such as Spain” (p. 6).

Moreover, it should be highlighted that, while grammatical errors can be tolerated, pragmatic mistakes can cause cultural misunderstandings (González-Lloret, 2021), and can take place despite the high linguistic proficiency of the learner (Blum-Kulka & Olshtain, 1984). The next section will explore the methodology followed to conduct the study.

## 2. Method

This paper focuses on the improvement of Spanish students' use of apologies. For that reason, we will compare the results obtained from a CG and an EG.

Participants of the CG were 17 Spanish-speaking students from the Universitat Politècnica de València, while those in the EG were seven Spanish students from the same university who participated in a telecollaboration project with highly proficient or L1 speakers of English from the University of Bath. They were enrolled in an optional third-year B2 level (CEFR) English for specific purposes subject in the aerospace engineering degree. All participants completed a questionnaire as a pre-test before receiving the treatment, which consisted of explicit instruction on pragmatics and apology performance by means of a PowerPoint presentation and audiovisual input. Afterwards, participants were expected to carry out six open

role-plays (one per week) whose main aim was to elicit apologies. The difference between the CG and the EG lies in the fact that the former carried out the task with their Spanish classmates in a traditional FTF setting, while the latter performed the role-plays in synchronous video conference sessions with their partners from Bath. At the end of the project, students from both groups completed the same questionnaire as a post-test. The survey was composed of ten multiple choice questions aimed at gathering information about the participants' use of apologies before and after the treatment.

The role-plays were recorded and transcribed. The strategies used to apologise were coded following a taxonomy based on Blum-Kulka and Olshtain (1984), Leech (2014), and Martínez-Flor (2016), and its frequency was calculated by means of a quantitative content analysis. Furthermore, the descriptive statistics of the responses from the pre- and post-test for each group were compared. Finally, the Eta coefficient was calculated to see if there was any relation between the number of strategies used by the members of each group and the modality where they were performed (i.e. FTF or telecollaboration).

### 3. Results and discussion

A total number of 81 role-plays were transcribed and analysed. Table 1 illustrates the results obtained from the classification of apologies strategies. An extra category was added for those strategies which did not belong to any of the established categories, but which we believed were the result of participants' L1 transfer. In terms of frequency, the EG used a slightly wider range of strategies compared to the CG. In fact, even though the EG was smaller than the CG, it used almost the same number of strategies. The main categories used by the CG are expressions of the Speaker's (S) regret such as *I am sorry*, explanations of why the fault occurred, and using a performative utterance such as *I apologise*. Conversely, apart from those strategies, the EG used much more apology intensifications such as *truly (sorry)*, showing concern for the Hearer (H), and promises of forbearance.

Table 2 summarises the findings from the descriptive analysis of the CG. The mean (M) revealed that there was a slight improvement only in Items 2, 3, 8, and 10. Conversely, in the case of the EG the improvement was observed in the M of Items 1, 3, 6, 7, 8, and 9, while Items 4, 5, and 10 showed no variation (Table 3). A regression was observed only in Item 2, while different items of the CG showed a slight regression.

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Table 1. Frequency of strategies used to apologise

Strategy	Type	CG		EG	
		n	%	n	%
Head act	Expression of S's regret	74	38.54	49	26.77
	Asking H's pardon or forgiveness	1	0.52	3	1.64
	Using a performative utterance	11	5.73	5	2.73
Expression of responsibility	Explicit self-blame	7	3.65	4	2.19
	Denial of fault	1	0.52	1	0.55
Explanation of why the fault occurred		41	21.35	28	15.30
Offer of repair		15	7.81	17	9.29
Promise of forbearance		8	4.17	16	8.74
Apology intensification	Concern for the H	4	2.08	12	6.56
	Intensifier/modifier	26	13.54	38	20.77
L1 transfer		4	2.08	10	5.46
<b>TOTAL N of strategies used</b>		<b>192</b>		<b>184</b>	
<b>TOTAL N of role-plays</b>		<b>50</b>		<b>31</b>	

Table 2. Descriptive statistics of the CG

		M	SD
Item 1	Pre-test	2.762	0.539
	Post-test	2.647	0.786
Item 2	Pre-test	2.810	0.512
	Post-test	3.000	0.000
Item 3	Pre-test	2.048	1.024
	Post-test	2.294	0.985
Item 4	Pre-test	2.810	0.402
	Post-test	2.824	0.393
Item 5	Pre-test	2.905	0.436
	Post-test	2.882	0.485
Item 6	Pre-test	2.524	0.750
	Post-test	2.353	0.931
Item 7	Pre-test	2.952	0.218
	Post-test	2.824	0.529
Item 8	Pre-test	2.667	0.577
	Post-test	2.706	0.588
Item 9	Pre-test	3.000	0.000
	Post-test	2.941	0.243
Item 10	Pre-test	1.952	0.740
	Post-test	2.235	0.664

Table 3. Descriptive statistics of the EG

		<b>M</b>	<b>SD</b>
Item 1	Pre-test	2.857	0.378
	Post-test	3.000	0.000
Item 2	Pre-test	3.000	0.000
	Post-test	2.714	0.756
Item 3	Pre-test	2.143	1.069
	Post-test	2.429	0.976
Item 4	Pre-test	3.000	0.000
	Post-test	3.000	0.000
Item 5	Pre-test	3.000	0.000
	Post-test	3.000	0.000
Item 6	Pre-test	2.143	0.690
	Post-test	2.571	0.787
Item 7	Pre-test	2.857	0.378
	Post-test	3.000	0.000
Item 8	Pre-test	2.857	0.378
	Post-test	3.000	0.000
Item 9	Pre-test	2.857	0.378
	Post-test	3.000	0.000
Item 10	Pre-test	2.000	0.577
	Post-test	2.000	1.000

Finally, the results of the Eta coefficient showed a statistically significant correlation between the number of strategies used to apologise by each student and the work modality as  $r = .71$ , which means that those students who participated in the telecollaboration used a higher number of strategies to apologise.

#### 4. Conclusions

The results of this study shed light on the effect that telecollaboration can have on the acquisition of the speech act of apologies. Although the main limitation is the small sample size, they showed that there is a relation between the number of strategies used to apologise during role-plays and participating or not in a telecollaboration. Moreover, the findings from the pre- and post-test revealed a higher tendency of improvement in the case of the EG. The study will be replicated to corroborate these results. In the light of the results obtained, future research should investigate the effects of telecollaboration on the acquisition of speech acts.



## 5. Acknowledgements

I thank Professor Ana Gimeno-Sanz (Universitat Politècnica de València) and Ana Sevilla-Merino (University of Bath) for letting their students participate in this study. This project is funded by Universitat Politècnica de València (Subprograma 1, PAID-01-19).

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# Remote online language teaching in a limited resource context during COVID-19: the case of Egypt

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**Abstract.** This study aimed to investigate how the enforced online language teaching operated in a limited resource context, i.e. Egypt. Based on the Technology Acceptance Model (TAM), a nation-wide survey examined how 258 language teachers perceived the sudden move to remote online teaching and whether such perceptions had an impact on their readiness and intention to use this mode during and after the pandemic. Confirmatory factor analysis was used and revealed that four factors constitute teachers' perceptions. Results showed that participants have positive perceptions of online teaching, which consequently indicate that they were ready to use online language teaching even after switching back to face-to-face. Demographic data had no statistically significant effect on the participants' perceptions of enforced online teaching. Teachers identified training needs that show readiness and intention to engage more with this mode of teaching.

**Keywords:** remote online teaching, EFL, TAM, Egypt.

## 1. Introduction

Published research prior to COVID on key challenges facing education in Egypt includes issues of over-centralized control, exam-orientation, and entrenchment of social inequalities (Loveluck, 2012). Evidence suggests the challenges are more severe for vulnerable groups including learners with poor socio-economics (Ersado & Gignoux, 2014), learners with disabilities, refugees, and asylum seekers. The swift move to remote online teaching during the pandemic was unforeseen and unprecedented. Additionally, training programs do not address the needs of online

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**How to cite this article:** El Ebyary, K., Shabara, R., & Abdelaty, Y. (2022). Remote online language teaching in a limited resource context during COVID-19: the case of Egypt. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 101-107). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1442>

teachers, which Moeini (2008) describes as ‘the missing part of online training programmes’. Studies in the research context focused on university levels (e.g. El-Sayad, Saad, & Thurasamy, 2021; Esawe, Esawe, & Esawe, 2022), but less attention was given to school teachers. The main research questions for this study were as follows.

- To what extent has the remote online teaching approach during the pandemic shaped or re-shaped teachers’ readiness to use technology for language teaching?
- To what extent have the demographic variables influenced teachers’ experiences during the pandemic, their needs, and intentions to use technological tools in the future?

## 2. Theoretical background

The use of online teaching tools in English as a Foreign Language (EFL) contexts has been the subject of research for a few decades focusing on issues such as perceptions of technology use (e.g. Cheng, 2007), interactive behaviors (e.g. Liao & Lin, 2011), and evaluating online teaching/learning (e.g. Chan, Chow, & Jia, 2005; Novo-Corti, Varela-Candamio, & Ramil-Díaz, 2003) among others. TAM has been a general framework for many studies. TAM was introduced by Davis (1986, 1989, 1993) more than four decades ago, but it still forms a significant element of current studies. Charness and Boot (2016) note TAM’s two primary factors affecting an individual’s intention to use new technology: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Davis (1986, 1989, 1993) explains these as the individual’s own likelihood that using a technological tool can improve tasks with relative ease. Attitudes are related to the individual’s appraisal of the need to use certain technological tools to fulfill his/her task. Behavioral intentions are concerned with the possibility of using the tool involved by this individual in the future.

## 3. Method

### 3.1. Instruments

A questionnaire of 24 Likert-type items was designed to collect data about EFL teachers’ perceptions of the enforced online teaching and the variables shaping/

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reshaping them. To validate the questionnaire, four experts examined the items for content validity and confirmatory factor analysis was used to assess its construct validity. Cronbach's alpha analysis was computed to examine reliability. Translation and back-translation procedures were implemented followed by a pilot on six teachers to investigate item clarity and appropriateness, instructions, and format.

### 3.2. Participants and procedures

The questionnaire was delivered via Qualtrics in December 2021, which resulted in 258 responses. Respondents came from state, private, and international institutions representing 16 out of the 27 geographical regions in the country. Age, educational qualifications, and teaching experience are shown in [Table 1](#) below.

Table 1. Demographics

Variable	n	%	Variable	n	%
<b>Age</b>			<b>Qualifications</b>		
< 25	23	8.9	BA	112	43.4
25-30	37	14.3	Diploma	91	35.3
31-35	52	20.2	MA	63	14
36-40	47	18.2	PhD	9	3.5
41-45	45	17.4	Other	8	3.1
46-50	33	12.8	Missing	2	0.8
51+	11	4.3			
Missing	10	3.9			
<b>School Type</b>			<b>Teaching Experience</b>		
Public	68	26.4	< 2	7	2.7
Experimental	54	20.9	2-5	36	14
Azhariate	10	3.9	6-10	54	20.9
Private	56	21.7	11-15	55	21.3
International	60	23.3	16-20	35	13.6
Missing	10	3.9	20+	68	26.4
			Missing	3	1.2
<b>Teaching Stage</b>					
Primary	102	39.5			
Intermediate/ Preparatory	64	24.8			
High/ Secondary	70	27			
Missing	22	8.5			

### 3.3. Analysis

Three statistical techniques were used, namely Confirmatory Factor Analysis (CFA), and descriptive and inferential statistics. CFA was used to understand the interrelationships among the questionnaire variables and their underlying dimension(s). Descriptive statistics were conducted to the participants’ responses. Inferential statistics (i.e. Kruskal-Wallis and One-way ANOVA, followed by the Scheffe post hoc-test) were computed to scrutinize the impact of biodata on participants’ perceptions of and readiness for online teaching.

## 4. Results

### 4.1. Factors influencing perceptions

The CFA suggested four dimensions constituting the construct of teachers’ perceptions of enforced online teaching which are (1) Attitude, Perceived Impact and Future Intention (APIFI), (2) PEU, (3) Perceived Challenges (PC), and (4) PU. Cronbach’s alphas were 0.93, 0.77, 0.77, and 0.58 for Factors 1, 2, 3, and 4 respectively.

### 4.2. Teachers’ perceptions

Item descriptive statistical analyses (frequencies (F), means (M), and standard deviations (SD)) revealed that the respondents had positive perceptions of enforced online teaching. Consequently, this reflects their readiness to endorse online teaching and their intention to use it in the future.

Table 2 illustrates the descriptive statistics of participants’ responses.

Table 2. Descriptive statistics

Factors	Number of Items	Responses	
		(Strongly) Agree – Can’t Decide – (Strongly) Disagree	
		M	SD
APIFI	13	3.05 – 4.02	0.858 ≤ SD ≤ 1.202
PEU	5	3.51 – 3.94	0.881 ≤ SD ≤ 1.092
PC	5	3.10 – 3.35	1.070 ≤ SD ≤ 1.269
PU	2	3.06 – 3.39	1.136 ≤ SD ≤ 1.154

### 4.3. Variables shaping/reshaping perceptions

Inferential statistics showed there was no statistically significant difference among participants' mean scores on the overall questionnaire and across its factors according to their age, school type, teaching stage, teacher qualifications, and teaching experience. The only significant difference found was related to Factor 2 (PEU), with primary stage teachers' increased perception of ease of online teaching use ( $t=0.001$ ,  $p=0.000$ ). Table 3 shows the factors of teachers' perceptions, variables tested, statistical tests used, values obtained from each test, and statistical significance.

Table 3. Kruskal-Wallis and One-way ANOVAs related to the relationships between teachers' demographics and perceptions

Factors	Variables and Statistical Tests				
	Age	School Type	Teaching Stage	Qualifications	Experience
	Kruskal-Wallis (H)	ANOVA and Post-hoc-test (Scheffe)	ANOVA and Post-hoc-test (Scheffe)	ANOVA and Post-hoc-test (Scheffe) (F-ratio)	ANOVA and Post-hoc-test (Scheffe) (F-ratio)
F1	0.173 (df=2)	0.534	0.131	0.081	0.084
F2	0.282 (df=2)	0.443	0.001 [Pr]*	0.089	0.056
F3	0.087 (df=2)	0.448	0.834	0.519	0.471
F4	0.193 (df=2)	0.098	1.340	0.263	0.641
Notes	*Significant at 0.05 Pr=Primary Stage				

The questionnaire open-ended responses revealed that involvement in enforced online teaching led participants to reflect on their practice and identify pedagogical training needs which could not have been identified otherwise. Some of these were online classroom management, online testing, online interaction and engagement, supporting learning disabilities, and materials accessibility. Such results support their claims for readiness and intention to engage more with this mode of teaching in the future.

## 5. Discussion and conclusion

This study investigated EFL teachers' perceptions, readiness, and intention to integrate online teaching during and after COVID. Findings revealed that teachers had positive perceptions of online teaching, which indicated they were ready to endorse this type of practice in the future. Demographics had no impact on

perceptions of online teaching. The need to deliver education to students urged teachers to use their limited resources during the pandemic despite lack of adequate training. Data suggested that primary teachers had more positive perceptions in relation to ease of/intention to use online teaching. This could be attributed to the educational reform of primary education adopted by the government which requires primary material to be delivered online by 2024. Therefore, enforced online teaching helped teachers to identify a partial substitute for face-to-face teaching and understand their training needs.

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## L2 Chinese language teachers' cross-cultural adaptation in teaching online courses using videoconferencing tools in a foreign country during the COVID-19 pandemic: a case study

Yue Fan<sup>1</sup>, Li Cheng<sup>2</sup>, and Zhu Zhu<sup>3</sup>

**Abstract.** This case study is based on teachers' personal observation of students of Oberlin College, Ohio, US, and students' feedback, and addresses cross-cultural communication of Chinese as a foreign (L2) language teacher, who is also the first author of this article. The study was conducted during the global pandemic; L2 language teaching methods in Oberlin College had to be shifted from face-to-face lectures to online teaching using videoconferencing tools, particularly Zoom. It was used not only as the online class platform, but also an additional live communication tool in other activities. The case study presented in this article was conducted mainly through observations in daily classes before and after the pandemic. The results suggest that reserved personality and inadequate cultural contact are factors of accultured difficulties for L2 Chinese language teachers when working in the US. This paper proposes solutions for preparations for a cross-cultural adaptability for Chinese language teachers teaching L2 Chinese abroad, especially in conditions like using videoconferencing tools in online teaching classes.

**Keywords:** TCSOL, cross-cultural communication, L2 Chinese language teaching, L2 Chinese teachers abroad.

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**How to cite this article:** Fan, Y., Cheng, L., & Zhu, Z. (2022). L2 Chinese language teachers' cross-cultural adaptation in teaching online courses using videoconferencing tools in a foreign country during the COVID-19 pandemic: a case study. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 108-112). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1443>

## 1. Introduction

Teaching Chinese to Speakers of Other Languages (TCSOL) has gradually become an important field of L2 language teaching after China's Reform and Open Policy. Since then, some Chinese universities started a TCSOL study major and recruited students to become L2 Chinese language teachers. Most studies of TCSOL teachers have focused on their teaching pedagogy of language itself, and there are relatively few discussions on their cultural adaptation when working in a foreign country. Some scholars indicate that teaching ability of teachers of L2 Chinese abroad includes at least three aspects: professional knowledge, working ability, and rich experience in teaching practice (Lv, 1989). The working ability includes the communicative ability, which mainly refers to the proper behavior and language in formal occasions and classroom teaching. It also includes a strong communicative ability in organizing, adjusting, and dealing with emergency situations.

When reviewing this from a cross-cultural perspective, the communicative ability could be an independent and important aspect. It may not only be an attachment of L2 language teachers' teaching ability, but also the embodiment of the teachers' cross-cultural communication skills. One famous theory is the u-curve theory of cultural adjustment, which is a framework that focuses on how people adjust to being in a new culture (Lysgaand, 1955). The u-curve theory of adjustment consists of four stages of adjustment (honeymoon, culture shock, adjustment, and mastery). We have an assumption that the influence of L2 language teachers' current stage is as vital as their teaching approach. Therefore, this paper focuses on the obstacles faced by L2 Chinese language teachers in cross-cultural teaching.

The two research questions are as follows.

- (1) What are the pros and cons online teaching classes have brought to L2 Chinese language teachers working in foreign countries?
- (2) How can we help novice L2 language teachers to improve the accultures experience when using videoconferencing tools in online teaching classes?

## 2. Design of the case study

Observation and experience: The first author was one Chinese language teacher of L2 Chinese in Oberlin College in the US. The observation was taken in daily

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teaching for half a month before turning into online class, and also another half-month's observation after having online class via Zoom. What was mainly observed included daily activities in L2 Chinese classes: daily lesson and Chinese table twice a week (a lunch time when language teachers and students gathered and the students were asked to chat in Chinese, or at least act out their newly learned dialogue). The observation experience was recorded by the teacher in teaching journals. The teacher observed their own actual experience in teaching and daily life, noted down different cross-cultural situations before and after the COVID-19 pandemic, and experienced the practical effects of the online conferencing tool Zoom.

Evaluations and interviews: The students' evaluation was a form which was released to students at the end of one semester. It contains study effect self-rating and one commenting question at the end. With the help of students' evaluations in May 2020, students' comments were collected, and the students agreed to release them to teachers. Also there were two students who were consent to talk about their feelings during the Chinese table. Ongoing analysis was employed to analyse the data. The researcher analyzed the data by repeatedly reading and recalling the recorded experience.

### **3. Results and discussion**

The results showed that online L2 Chinese language teaching has both pros and cons for L2 Chinese teachers' cross-cultural experiences.

From self-observation, the interactions between the teachers and the students before the pandemic was not limited to classrooms, but after the pandemic, the communication space became sharply compressed to the Internet only. Although digital face time can still be guaranteed with the help of Zoom or other videoconferencing tools, students have lost most of the opportunities to directly contact and interact with their teachers. Teachers would no longer have other cultural communication scenarios except for the online class time. Following [Lysgaand's \(1955\)](#) u-shape curve theory of acculturation, online teaching greatly extends the current stage of acculturation for teachers.

However, the videoconferencing tool Zoom also offered a great help to language teaching. The monitors hinder face-to-face communication between teachers and students, but indeed expand the space compared with the traditional classroom. For example, Oberlin College has the Chinese table activity. Before the pandemic,

students were asked to take their lunch boxes to the venue to eat and chat in Chinese, but after teaching online, teachers could show a simple Chinese dish in their kitchen, and teaching assistants could display necessary Chinese vocabulary in the chat box. By the end of the activity, some of the students were able to briefly introduce how to make a Chinese dish by using the grammar and new vocabulary. Such examples show a great benefit to a multimedia assisted language study as well as to the process of acculturation.

Students also mentioned that in previous face-to-face teaching, in addition to speaking, eyes and gestures were used by teachers intentionally or unintentionally to convey additional information, which added to students' understanding and attractions. In the screen time, however, only the upper body of the teacher could be seen from the screen, and less body language would be perceived by students when the teacher's image was restricted into a small window of videoconferencing tools. According to students' evaluations in May 2020, descriptions like *enthusiastic*, *motivated*, *humorous*, and *lively* were mentioned in the commenting, but appeared as the comparative good things of their native US college lecturers' online performance. Students addressed these words to indicate that without face-to-face or eye-to-eye contact, L2 language teachers needed more passion to create a lively atmosphere. A lively atmosphere, in students' opinions, turned out to be an important attraction during online class.

#### **4. Conclusions**

This case study showed that the cross-cultural experience of L2 Chinese language teachers in foreign countries has actually been weakened by online distance teaching to a certain extent, but a new and positive perspective should provide insights about the benefits of using videoconferencing tools in online teaching classes. The experience of the first author and her students showed some of the possibilities, such as using Zoom in the Chinese table activity, to break the space limit of a traditional classroom and shift the study environment to anywhere that could motivate students' expressions.

Moreover, it is a useful way to utilize videoconferencing tools to create a sense of community in order to maintain a good bonding of teachers and students. Another possible approach is that, when teaching the module 'positions of objects', if consent, teachers and students could show their own room and talk about the position of anything in it. With the help of Zoom, the students could learn more about each other, find more topics for discussion, and improve their own interest in

learning a foreign language. This may require teachers' recognition of local culture and an open, inclusive mentality. This kind of literacy would be acquired from teacher training preparation before leaving their own country to teach in a foreign country. Therefore, TCSOL teacher training institutions should pay more attention to personality adaptation by creating typical cultural scenes and avoiding potential conflicts. To be more specific, preparing the teacher to use their bodily language fully on screen when teaching online using videoconferencing tools. Training institutions could organize online teaching training modules where teachers could review their screen recording in order to experience the teaching during an online class scenario before the actual practice.

## 5. Acknowledgments

This research was supported by the research fund (Grant No: BUPT-SH-SPRC-202101).

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# Evaluating a novel CALL tool for the development of oracy and academic language in young English language learners

Nick Feroce<sup>1</sup>, Jenny Liu<sup>2</sup>, and Rajendra Chattergoon<sup>3</sup>

**Abstract.** This study examines the relationship between English language proficiency outcomes and the use of a Computer-Assisted Language Learning (CALL) tool that is designed to strengthen the academic English and oral proficiency skills of young English Learners (ELs). We compare scores on a standardized English language proficiency assessment for 2,034 ELs from kindergarten through Grade 5 in the US who either used the CALL tool during the 2020-2021 academic school year (n=1,478) or did not (n=556). Descriptive analyses show larger scores for students who used the program than those who did not, and this was seen across student demographic subgroups. Statistical analyses reveal that this difference is significant even when accounting for student demographics and enrolled school and that greater program use is related to higher proficiency scores. The largest effects are seen for oral proficiency scores. The study raises implications for use of CALL tools in contexts where English is the language of education.

**Keywords:** academic English, young language learners, oracy, oral proficiency.

## 1. Introduction

Within the US, children learning English as a second language readily acquire the social oral language used in informal contexts (e.g. with friends), but often do not acquire the language proficiency skills needed for success in content-area classes (Menken, Kleyn, & Chae, 2012). This ‘academic English’ is a formal register of

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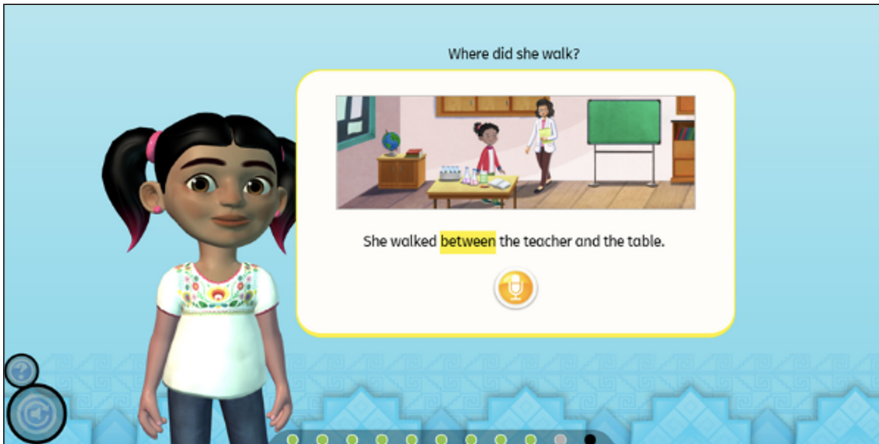
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**How to cite this article:** Feroce, N., Liu, J., & Chattergoon, R. (2022). Evaluating a novel CALL tool for the development of oracy and academic language in young English language learners. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 113-118). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1444>

standard English and is integral for helping students interact in the classroom and successfully obtain and make use of subject matter information (Scarcella, 2003; Valdés, 2004). Furthermore, many ELs receive services that are not appropriate for their English proficiency level (Menken et al., 2012) and which often do not emphasize oral language skills (*oracy*, NASEM, 2017).

CALL tools may help effectively address the academic language needs of ELs. To this extent, Lexia® English Language Development™ (Lexia English) was developed and released in 2020. Lexia English is a blended learning program for ELs in kindergarten through Grade 6 (K-6), and consists of an online computer program, teacher-led lessons, and student progress-monitoring data. The program consists primarily of speaking and listening activities, which utilize academic content (science, math, social studies, general knowledge) and are framed as simple, scripted conversations with program characters. An example is shown in Figure 1.

Figure 1. Example program image



The program is grounded in various theories of second language acquisition. Comprehensible input (Krashen, 1982) is presented via language frames, and an auto-placement tool places users at an appropriately challenging level. A speech recognition engine attuned to various English accents allows for users to practice speaking (Output Hypothesis; Swain, 1995), while corrective feedback is provided explicitly to learners (Interaction Hypothesis; Long, 1996). Furthermore, an adaptive program design provides students with explicit instruction and additional practice for activities they answer wrong twice in a row.

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The aim of this study was to examine the impact of Lexia English on English language proficiency outcomes for students in Grades K-5. Our research questions were the following: Do students who use Lexia English score higher on standardized English language proficiency tests compared to their peers who do not use the program? How does the amount of program use impact English proficiency outcomes?

## 2. Method

One school district in the US signed a data exchange agreement with Lexia to share demographic and assessment data for 2,034 EL students in Grades K-5 across 21 schools. English proficiency scores were from the 2021 English Language Proficiency Assessment for California (ELPAC, scores on vertical scale from 1,150-1,700 Grades K-2, 1,150-1,800 Grades 3-5) and included scores for the overall assessment and oral and written subdomains.

All district EL students had access to Lexia English during the 2020-2021 school year, however there was considerable variation in the amount of program units completed (*Range*=1-1,163, *M*=85, *SD*=119) due to pandemic-induced changes to remote and hybrid schooling environments. We considered program users to be students who completed at least one unit (three to five minutes).

We transformed student scores into grade-specific z-scores (interpreted as standard deviations, SDs) and statistically analyzed them using multiple linear regressions. We included 2021 ELPAC scores as the dependent variable, and dummy-coded predictor variables for L1 (Spanish, non-Spanish), gender (male, female), socioeconomic status (low SES, non-low SES), and enrolled school.

## 3. Results and discussion

A summary of overall ELPAC scaled scores is shown in [Table 1](#).

Table 1. Mean (SD) ELPAC scores by group

	Program Users	Non-users
All participants	1,487 (70)	1,472 (109)
<b>Gender</b>		
Male (n=1,112)	1,486 (72)	1,463 (118)
Female (n=922)	1,488 (68)	1,484 (94)

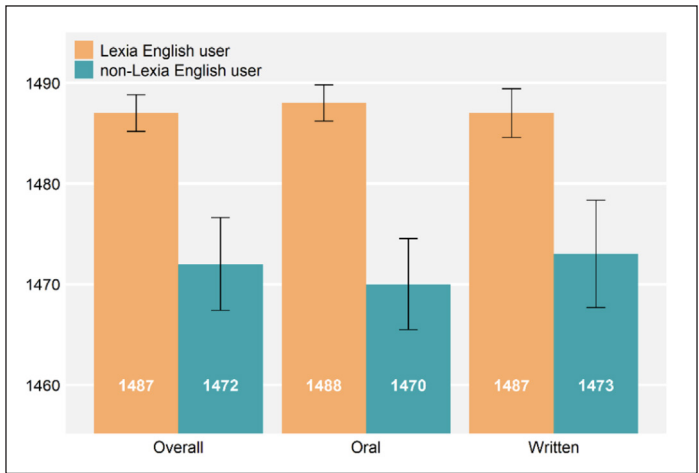


SES		
Low SES (n=937)	1,471 (63)	1,449 (100)
Non-low SES (n=1,097)	1,502 (74)	1,487 (112)
L1 Group*		
Spanish (n=896)	1,467 (68)	1,447 (96)
Non-Spanish (n=1,138)	1,505 (68)	1,486 (113)

\*Students spoke 50 different L1s, but we grouped this as a two-level variable for statistical power.

As seen in Table 1, ELPAC scores were higher for Lexia English users than non-Lexia English users, and this pattern is seen for all student demographic subgroups.

Figure 2. Average ELPAC score by domain and standard error bars



As seen in Figure 2, Lexia English users scored higher than non-Lexia English users in both the oral and written domains. Regression analyses confirmed these patterns: Lexia English users scored significantly higher than non-Lexia English users on the overall ( $B=0.193, SE=.051, p<.001; R^2=0.192, p<.001$ ), oral ( $B=0.219, SE=.052, p<.001; R^2=0.155, p<.001$ ), and written ELPAC ( $B=0.149, SE=.051, p=.004; R^2=0.191, p<.001$ ). The largest effect was seen for the oral domain, in line with the program’s focus.

We also examined just the Lexia English users and incorporated a predictor variable for the number of program units completed. This revealed that a greater number of program units completed was significantly related to higher scores on the overall ELPAC ( $B=0.045, SE=.015, p=.003; R^2=0.112, p<.001$ ), such that completion of 22 units was associated with a one point scale score increase.

Overall, these results demonstrate how explicit language instruction and targeted oral language practice can be incorporated into CALL technology to support academic language and oracy development for young ELs. Many existing English language ed-tech tools are designed for the acquisition of reading and writing skills or for acquiring English in contexts where it is not the primary language of education (e.g. Bang, Olander, & Lenihan, 2020). Thus, this is a novel contribution toward applying CALL tools across different contexts. Additionally, the diverse sample may suggest that the positive findings could generalize the use of similar tools in contexts where English is the primary language of education and society.

The results corroborate positive findings seen for personalized learning affordances of adaptive learning systems (Slavuj, Meštrović, & Kovačić, 2017), and dedicated attention to speaking and listening activities in (system-guided) dialogue-based CALL systems (Bibauw, François, van den Noortgate, & Desmet, 2022). The program is not meant to replace real-life dialogue, but rather complements classroom instruction by providing ELs a low-anxiety environment to strengthen their English language skills via guided, self-paced interactions with program characters (see Bibauw et al., 2022). Finally, positive findings were seen for both written and oral domains, in line with research highlighting the importance of oral language skills in reading/writing (NASEM, 2017).

## 4. Conclusions

This study shows early evidence that a CALL tool focused on oral language and academic English for young ELs may lead to higher English language proficiency, particularly as students complete a greater number of program units. We cannot claim that the program causes this as we did not control for students' prior year achievement scores (due to limited data availability). Additionally, it remains to be seen how educators' use of teacher-led lessons and student progress-monitoring data impacts student outcomes. Overall, the study serves as a promising first step toward understanding the efficacy of a new CALL tool.

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# Significant determinants of student retention and efficient engagement strategies in LMOOCs

Kolbrún Friðriksdóttir<sup>1</sup>

**Abstract.** This article provides evidence of critical factors of student retention in Language Massive Open Online Courses (LMOOCs). The study used multiple sources: tracked retention data (n=43,000), survey data in correlation with tracking data (n=400), and qualitative data (174 informants) from a survey (Friðriksdóttir, 2018, 2021a, 2021b). The data came from learners in seven courses and across different delivery modes in the LMOOC program Icelandic Online (IOL, <https://icelandiconline.com>). First, analysis of the tracking data revealed low overall completion rates and that retention was highest in the blended mode of delivery. The analysis also uncovered a specific dropout pattern and pattern of user engagement. Second, the survey study identified six content-related and four tutor-related engagement factors and that learners' differing goals for course participation influenced retention. Finally, qualitative data analysis revealed intrinsic and extrinsic motivational factors responsible for course completion, whereas non-course-related factors affected retention among dropouts. Overall, the study identified multi-ranged determinants of student retention.

**Keywords:** LMOOC retention, content factors, tutored factors, Icelandic Online.

## 1. Introduction

This paper briefly summarizes a research project on LMOOCs presented in Friðriksdóttir's (2018, 2021a, 2021b) previous articles. In this study, critical factors of retention in LMOOCs were considered within the context of IOL, a free and open web-based online program for L2 Icelandic learners developed at the University of Iceland. This Computer Assisted Language Learning (CALL)

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**How to cite this article:** Friðriksdóttir, K. (2022). Significant determinants of student retention and efficient engagement strategies in LMOOCs. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouësný, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 119-123). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1445>

program offers seven free, self-directed, interactive courses (CEFR A1-C1) and features an integrated tracking system that monitors students' behavior from the time they enter a course until they leave. Around 270,000 learners worldwide have attended the program since the launch of the first course in 2004. IOL's design relies on diverse second-language acquisition pedagogical principles (Arnbjörnsdóttir, 2004; Arnbjörnsdóttir, Friðriksdóttir, & Bédi, 2020) which are evident in the content structure and the strategies used for instruction and practice. The courses are delivered in three learning modes; an open self-directed mode, a blended mode, and a distance mode. A human tutor offers guidance in the blended and distance modes, while the open self-directed modes do not.

This study addresses the issues of low retention rates (Jordan, 2015) and attrition patterns (Reich, 2014) in LMOOCs in relation to a course's learning materials and the lack of empirical studies based on large-scale, long-term, computer-based tracking data (Gillespie, 2020). The study also addresses concerns that LMOOCs lack engaging pedagogy and design strategies for the L2 learners (Colpaert, 2014; Sokolik, 2014). They also lack direct guidance and support from a tutor in such a learning environment (Ross et al., 2014). These issues might explain the high attrition rates in LMOOCs. More evidence is needed from LMOOC learners themselves, who may provide significant insight into their own engagement patterns (Doiz, Lasagabaster, & Sierra, 2014).

## 2. Methods

This research study employed mixed methods. First, tracked retention data (n=43,468) was collected over eight years from learners in all seven IOL courses and the three delivery modes of two courses to gain an insight into student retention and overall online behavior in IOL. Data mining and Learning Analytics (LA) were employed in the analysis of this data.

Second, a survey instrument and a questionnaire were used to provide information about learners' experiences of various course-specific elements and other motivational factors. Six content-related factors were investigated: curated and sequenced course structure, clear and salient learning objectives, gradual and scaffolded presentation of input, continuing storylines, form-focused and scaffolded presentation of grammar, and variety in types of learning objects. Additionally, four tutor-specific factors were examined: a detailed introduction to the program, private interaction with the tutor, a set syllabus, and overall tutor support during the course (Friðriksdóttir, 2021c, p. 27). The factor of learners' initial goals for

participation was also explored. Survey data (n=400) and retention data (n=400) on each participant were analyzed separately and then merged.

Finally, an open-ended questionnaire was distributed through the survey among learners with an aim toward generating insight into why learners either complete a course or disengage earlier. This data (174 informants) was analyzed for common themes.

### 3. Results

Firstly, the tracking data analysis (n=43,468) showed low completion rates across all courses and delivery modes (2.4 to 18.2%), and that the blended learning modes were more effective in retaining learners than the other delivery modes studied. Furthermore, through the mining of this data and the use of LA, the study identified a pattern of attrition among non-completers as well as a pattern of user engagement across all courses and modes. The findings showed that students frequently drop out early in these courses, but that they also may disengage toward the end (Friðriksdóttir, 2018, 2021c).

Secondly, the survey study (n=400) identified six content-related factors that most participants considered important for their engagement with the course, i.e. curated and sequenced course structure, clear and salient learning objectives, gradual and scaffolded presentation of input, variety in types of learning objects, continuing storylines, and form-focused and scaffolded presentation of grammar. When the survey data was measured against the tracking data, three of the content factors were found to have a positive impact on student retention: curated and sequenced course structure, gradual and scaffolded presentation of input, and variety in types of learning objects. Similarly, most participants considered the four tutor-related factors important for their engagement, i.e. set syllabus, private interaction with the tutor, detailed introduction of the program, and overall tutor support. All of these factors had a positive impact on retention in the blended mode, but none of them did in the distance mode (Friðriksdóttir, 2021a, 2021b, 2021c).

Thirdly, the results showed that over half of the learners (n=400) began the program with the intention of completing the full course while the rest did not, and that the goal to complete a course had a significant impact on actual completion.

Finally, analysis of the qualitative data (112 informants) from the course completers revealed various motivating factors for continuing with the course, such as

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interesting course material or an interest in the language or culture. Furthermore, statements from learners (62 informants) who intended to complete a course but disengaged earlier show that factors unrelated to the course, such as time constraints, affected retention (Friðriksdóttir, 2021a, 2021b, 2021c).

## 4. Discussion and conclusions

Collectively, this study contributes wide-ranging data from different sources on the engagement behavior and perspectives of LMOOC learners in the context of their learning materials. This large-scale, long-term, empirical tracking study provides detailed information on learners' online behavior, the timing of student attrition, as well as the extent to which non-completers engage with the course material. This finding highlights the benefits of exploring tracked progress within LMOOCs. Furthermore, the survey study's findings that IOL's engagement strategies and the presence of a tutor may be crucial for learner engagement highlight the value of CALL design and tutor support in LMOOCs. Results also showed that learners join a course with different goals for participation, which bears discussion in relation to retention. The qualitative data analysis, moreover, sheds light on a diverse group of students in this learning environment and revealed broad individual perspectives on critical factors of LMOOC retention and attrition. This study informs design directions for course developers and instructors in LMOOCs. Future research possibilities based on the findings of this study include an investigation of the benefit of supplementary resources in LMOOCs for student retention and learning outcomes.

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# Chatbots in language learning: AI systems on the rise

Robert Godwin-Jones<sup>1</sup>

**Abstract.** The use of chatbots in language learning has been on the rise. In recent Computer-Assisted Language Learning (CALL) research, there is a consensus that rule-based, scripted voice systems are optimal for language learning. Such systems integrate well into instructed language learning in that interactions with the user are predictable and controlled. Open, AI-based voice systems (such as in personal assistants like Siri) do not provide that degree of task-oriented learning. However, the argument is made here that they have the potential to provide open-ended conversational practice and language development which aligns with an ecological, usage-based perspective on language development.

**Keywords:** chatbots, artificial intelligence, voice systems, intelligent personal assistants.

## 1. Introduction

Most dialogue-based projects in CALL involving voice have utilized rule-based, limited-domain systems (Fryer, Coniam, Carpenter, & Lăpușeanu, 2020). Such systems have been available in text-based dialogue systems going back to the 1960's. Experimentation with these systems for language learning began in the 1980's, particularly through work in tutorial CALL. More recently, a number of chatbots for language learning have been released, including Mondly and Eggbun (Alm & Nkomo, 2020). General-purpose chatbots have also been used, such as Cleverbot (Fryer et al., 2020). Interactions in such systems are based on scripts deployed as decision trees, which supply predetermined responses to user input. This provides a high level of control, leading to relatively predictable exchanges. Using such voice systems, particular areas of language study can be targeted, and

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**How to cite this article:** Godwin-Jones, R. (2022). Chatbots in language learning: AI systems on the rise. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 124-128). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1446>

the level of language adjusted for learners with different degrees of proficiency. This kind of controlled practice aligns with skill acquisition theory and has proven to be a widely used approach in integrating chatbots into structured language learning environments. Free-flowing conversations with a bot can be a frustrating experience, as many studies have shown. [Bibauw, François, and Desmet \(2019\)](#) argue that “free dialogue should not be seen as the ultimate target of dialogue-based CALL” (p. 856). That position is echoed in most studies of voice systems in CALL. This paper argues, however, that open-ended conversations with a spoken dialogue system should not be quickly dismissed as a viable alternative to scripted systems. In particular, Intelligent Personal Assistants (IPA’s), such as Alexa, offer the potential to combine the advantages of language practice through open-ended conversation with features enhancing both learner willingness to communicate and implicit, usage-based learning.

## 2. AI-based systems

Dialogue management in scripted systems is handled in a variety of ways, through implicit or explicit mechanisms. [Bibauw et al. \(2019\)](#) offer a typology of constraints used in dialogue-based CALL. Typically, exchanges are based on a question-answer format, with responses controlled with multiple choice or other closed response options. In that way, the systems supply pattern drills in chosen language use situations, with limited opportunities for multiturn exchanges. They are not designed to provide practice in meaningful exchanges outside the subject area and language limits imposed by the system. Such systems function as tutors, carrying out a specific pedagogical role. While this is certainly useful for language learners, particularly at early stages of development, chatbots offering open conversation can do more, namely provide both practice in linguistic forms and socialization into situated language use. That can be especially useful at later stages of language development. Recent developments in voice technologies, fueled by advances in AI and big data collection have led to dramatically improved performance of general-purpose chatbots, such as Google Assistant. These IPAs are built into smartphones and enable users to access through voice many services available online including search or translation. They are increasingly becoming available in other connected devices such as earbuds, home speakers, and car consoles. This developing Internet of Things (IoT) heralds the arrival of ambient intelligence, with voice services available almost anywhere, at least for affluent populations. This represents one of the singular advantages of IPAs for language learning, namely that rather than being a scheduled learning task, they integrate into the everyday lives of learners as available second language partners.

While voice services are available in the most widely spoken languages, not every language is represented. The range of services may be limited by language as well, with the most up-to-date and robust support for speakers of English. Voice recognition services are designed for mainstream speakers of the language and will likely struggle with non-standard speech including dialects and learner language. Nevertheless, there has been considerable experimentation with the use of IPAs in language learning, with generally positive results (Bibauw, François, Van den Noortgate, & Desmet, 2022). Their use has been shown to be effective for novice learners, who are able to practice pronunciation and basic conversations. The systems can serve as models of expert speakers, and, compared to humans, possess infinite patience, allowing for extensive trial and error without judgment. In that way, they have been shown to help overcome anxiety and encourage a willingness to communicate (Alm & Nkomo, 2020). Most studies report on IPA use in instructed learning environments; little research has been published on their use by autonomous learners or in informal learning settings. Yet that use is likely to hold considerable promise for both independent language learning and language maintenance. That will particularly be the case as more personal devices such as smartglasses are released, which allow interactive engagement with users' surroundings mediated by language.

### **3. Expanding voice systems for language learning**

While IPAs in their current configurations have been shown to be potentially beneficial to language learners, there are developments and add-ons that can make them more useful for that purpose. One of the options is to add functionality to a commercial system through a third-party app. That may be possible if an appropriate API service is available or if the system is set up to integrate add-ons, as is the case with Alexa. That Amazon-created IPA allows for 'skills' to be added to its core functions. Several language learning apps have been created in that way (Maria, 2021). One of the more promising directions for chatbots is to use and customize a social bot. A prime example is XiaoIce from Microsoft Asia. While mainstream IPAs are designed to function as transactional agents, i.e. to reply succinctly to user queries, social bots are programmed to serve as artificial companions. They are endowed with a distinct personality profile and are capable of engaging in multiturn conversations. One of the enablers of that functionality is the maintenance in the AI system of a distinct user profile. This allows a chatbot to recall and use information from prior dialogues. XiaoIce is typical of social bots in that it is not just reactive, but proactive, asking follow-up questions, and even suggesting conversation topics. Studies using XiaoIce describe conversations lasting over half an hour (Zhou, Gao,

Li, & Shum, 2020). In contrast, IPAs currently maintain a minimal user profile, usually limited to information about subscribed services. On the other hand, they are moving in the direction of developing greater social skills, with some ability to engage in small talk, improved dialogue management, and synthetic voices which sound much less robotic.

In order for chatbots to move from the role of tutor to that of conversation partner, the AI system needs to be able to converse on a broad array of topics. One of the developments in AI that is moving in that direction are large language models such as LaMDA (from Google) and GPT-3 (from OpenAI). These are systems based on incredibly large datasets, which are converted into artificial neural nets using machine learning (Godwin-Jones, 2021). They have been shown to be capable of generating texts on a large variety of topics, in different genres, and in various languages. Hybrid systems, built upon extending existing large language models, have the potential to combine the advantages of language practice through open-ended conversation with features enhancing both learner motivation and implicit, usage-based learning.

## 4. Conclusion

Using a mainstream IPA, deployed through a dedicated app or a commonly used messaging system, shifts the dynamics of exchanges from an artificial academic setting to an experience integrated into everyday life. That is likely to make the service more universally available (including through IoT devices) and enhance motivation. That persistent and individualized, always-available status holds the promise of new options for language learning/maintenance, especially for autonomous learning. This aligns with ecological approaches to CALL as well as emergentist views of second language acquisition, which move away from linear and pre-defined pathways to language learning in favor of a more dynamic and holistic approach.

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# Verbal and nonverbal communication in high-immersion virtual reality for language learners

Alice Gruber<sup>1</sup> and Regina Kaplan-Rakowski<sup>2</sup>

**Abstract.** Virtual Reality (VR) offers language learners a valuable environment for practicing language skills and other aspects essential for language development, interaction, and negotiation of meaning. For example, speaking practice in VR using avatars can reduce speaking anxiety and increase users' sense of agency. Social spaces in VR present possibilities for verbal and nonverbal communication. This conceptual paper discusses the advantages and drawbacks of both types of communication in high-immersion VR and the implications for language learners. Language learners rely on multiple modes of communication, including nonverbal behavior such as gestures. However, VR often lacks behavioral anthropomorphism, i.e. when an avatar cannot speak, move, or act in a human-like way, which may negatively impact communication, especially at beginner level.

**Keywords:** high-immersion VR, language learning, verbal and nonverbal communication, online social spaces.

## 1. Verbal and nonverbal communication

While interacting, interlocutors depend on Verbal Communication (VC) and NonVerbal Communication (NVC). VC can be spoken or written and uses words (i.e. language, see [Rocci & de Saussure, 2016](#)). Speech in a face-to-face format differs from that in VR format because faces are shielded through an avatar in

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**How to cite this article:** Gruber, A., & Kaplan-Rakowski, R. (2022). Verbal and nonverbal communication in high-immersion virtual reality for language learners. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 129-134). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1447>

VR (i.e. a representation of self in virtual settings). Written communication in VR spaces typically takes place using chats or personal messages.

NVC, such as facial behavior, gaze, gestural behavior, and spatial behavior, plays an important role in human interaction (Chun, Karimi, & Sañosa, 2022). Facial expressions and gaze reveal information, emotional states, attention, and intention (Maloney, Freeman, & Wohn, 2020). Gestural behavior including hand movements can support and replace verbal behavior. Spatial behavior, or proxemics, refers to the measurable distances between interlocutors and is culturally dependent (Maloney et al., 2020). NVC can convey information regarding a person's willingness to communicate and to listen (Barkai, 1990). It can also regulate interactions, for instance, when nodding is used to signal turn-taking (Aburumman, Gillies, Ward, & Hamilton, 2022). In a language learning context, NVC is particularly important because audiovisual presentation facilitates language learners' perception and recognition of foreign sounds (Davis & Kim, 2001). In this paper, we use the terms nonverbal communication and nonverbal behavior interchangeably.

## **2. VR-assisted language learning and verbal and nonverbal communication**

Given the growing interest in VR-assisted language learning (Dhimolea, Kaplan-Rakowski, & Lin, 2022) and the fact that communication is key in language learning, our article discusses how VC and NVC take place within various VR spaces and what possible shortcomings of VR technology currently exist regarding communication.

We focus on high-immersion VR, which is defined as “computer-generated 360° virtual space that can be perceived as being spatially realistic, due to the high immersion afforded by a head-mounted device” (Kaplan-Rakowski & Gruber, 2019, p. 552). Wearing a head-mounted device, known as a VR headset, offers embodiment, sense of presence, and immersion. High-immersion VR allows for an embodied interaction and a wide range of NVC (Maloney et al., 2020). Interlocutors in VR can use a haptic system (i.e. virtual hands), which allows for making gestures and acting in other ways that feel natural and, consequently, increase the embodied cognition. Social VR applications (e.g. vTime and BigScreen VR) enable avatar-mediated interaction between users and often include novel options for nonverbal behavior using virtual emojis (see Figure 1 below) to compensate for the lack of facial expressions.

VR-specific interactional patterns and norms may develop and influence each other (Ahlers, Lazović, Schweiger, & Senkbeil, 2020). High-immersion social VR can impact interaction regarding topic choice (Gruber, Canto, & Jauregi-Ondarra, forthcoming) and, as a result, can influence learners' lexical choice. While VC depends on users' own voice and their written input, NVC is conveyed through users' avatars with limited gestures and animations that are often pre-programmed (Maloney et al., 2020).

In language learning contexts, social VR apps can be used for a variety of communication constellations such as one-on-one tutoring (Kaplan-Rakowski & Gruber, 2021), larger group tutoring (as in the case of Immerse), collaborative international learning, and intercultural encounters (Ahlers et al., 2020; Gruber et al., forthcoming; Jauregi-Ondarra, Gruber, & Canto, 2021). In these interactions, users' voices are their own, and users are personified as customized avatars (see Figure 2 below). While users of social VR apps in noneducational settings sometimes choose to rely only on NVC for privacy and disable the voice function (Maloney et al., 2020), language learners using social VR apps are typically expected to complete tasks orally in the target language.

Before 2022, VR headsets could only convey subtle emotional cues until the release of Meta Quest Pro, which introduced full face and eye tracking allowing to facilitate NVC. Although NVC is integral to language learning, research on verbal behavior and NVC is limited.

Figure 1. Virtual emojis (<https://hubs.mozilla.com/docs/hubs-features.html>)





Figure 2. Collaborative interaction in VR



Although NVC is integral to language learning, research on verbal behavior and NVC is limited. [Peixoto, Melo, Cabral, and Bessa \(2021\)](#) explored the avatars' body animations and lip synchronization on listening comprehension in an English as a foreign language setting. The results indicate that avatars with realistic animations, movements, and lip synchronization positively affect the users' sense of presence, learning, and overall experience. A lack of lip synchronization during avatar-to-avatar communication can negatively affect language comprehension ([Kaplan-Rakowski & Gruber, 2021](#)) because language learners must rely mostly on live voice input and paralinguistic features such as nonverbal vocal qualities.

### **3. Implications, future directions, and conclusion**

Educators need to consider learners' limited choices as well as the novel options available regarding verbal and nonverbal behavior in social VR applications and

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their impact on learners' interactions. Commercial VR apps do not typically offer face tracking, which can make communication more challenging. The use of VR-inherent NVC options such as virtual emojis may influence and change learners' interactional patterns, including their verbal behavior, and their use of strategies to communicate successfully. The lack of lip-reading opportunities may mean that learners rely on and, thus, train their listening skills to decipher spoken text. Although research indicates that Foreign Language Anxiety (FLA) can be reduced in VR (Gruber & Kaplan-Rakowski, 2020, 2022), the need to predominantly attend to verbal behavior and the lack of lip synchronization may impact FLA. Research is required to understand the effect of VR-inherent verbal and nonverbal behavior options on FLA.

Furthermore, no study has examined whether and how language learners compensate for the lack of facial expressions, especially at lower proficiency levels. Little attention has been paid to language learners' negotiation of meaning and compensation strategies when faced with time lags and technological glitches. The possible effect of limited nonverbal cues on language learners' cognitive load and social presence during VR interactions should be explored. Furthermore, research is needed to understand whether and how spatial behavior in VR and the use of virtual emojis are culture-dependent and whether language learners notice cultural differences in such context.

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# Language instructors on their emergency remote teaching pedagogy during the pandemic

Marie-Josée Hamel<sup>1</sup>, Jill Landry<sup>2</sup>, and Louis-David Bibeau<sup>3</sup>

**Abstract.** In this paper, we report on a study that took place during the COVID-19 pandemic and for which we interviewed ten experienced, university level, language instructors about their digital practices as they found themselves teaching in an Emergency Remote Teaching (ERT) mode. The study sought to describe how, through their professional activities and experiences, they developed new and/or further online competencies and how the ERT context brought them to rethink their pedagogical practices and namely, their Written Corrective Feedback (WCF). Our results show that language instructors' digital competencies are on a dynamic continuum of changes with some who faced challenges, while others sought opportunities or provided solutions during that unprecedented period. An adapted version of the SAMR (Substitution, Augmentation, Modification, and Redefinition) model (Puentedura, 2010) is suggested, which takes into consideration this ERT context.

**Keywords:** emergency remote teaching, professional didactics, digital competencies, language instructors, written corrective feedback.

## 1. Introduction

The COVID-19 pandemic precipitated language instructors into an ERT mode (Jin, Deifell, & Angus, 2021), finding themselves teaching in an unfamiliar professional context for which they were not prepared. Consequently, they had no choice but to cope, develop some online competencies (Cf. Hampel & Stickler, 2015), and

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**How to cite this article:** Hamel, M.-J., Landry, J., & Bibeau, L.-D. (2022). Language instructors on their emergency remote teaching pedagogy during the pandemic. In B. Arnþjómsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 135-140). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1448>

adapt their pedagogy to be able to continue to meet their expected and institutional professional standards, as well as their language courses' requirements and students' needs.

Adopting a 'professional didactics' stance (Pastré, Mayen, & Vergnaud, 2006), we designed our study seeking to describe how, through their professional activities and experiences, language instructors developed new and/or further online competencies; how the ERT context brought them to rethink their pedagogical practices and namely, their WCF ones (Cf. Hamel & Bibeau, 2021). Professional didactics view and define professional work as training and transformation opportunities (Mayen, 2012, p. 60), both within and outside of formal professional development training contexts. It is an intersection of work, learning, and training. It aligns well with the ERT context where training was done rapidly, in vivo.

This study is part of a larger CALL design and development project for which we are currently prototyping a digital tool to support and optimize language instructors' digital WCF practices (Hamel & Bibeau, 2021; Hamel, Slavkov, Inkpen, & Xiao, 2016). We investigated these practices in order to better understand the ergonomics of the 'teacher-task-tool' interaction in that specific digital context (Caws & Hamel, 2016) and to identify desirable affordances (Gibson, 1979) for our prototype.

## 2. Method

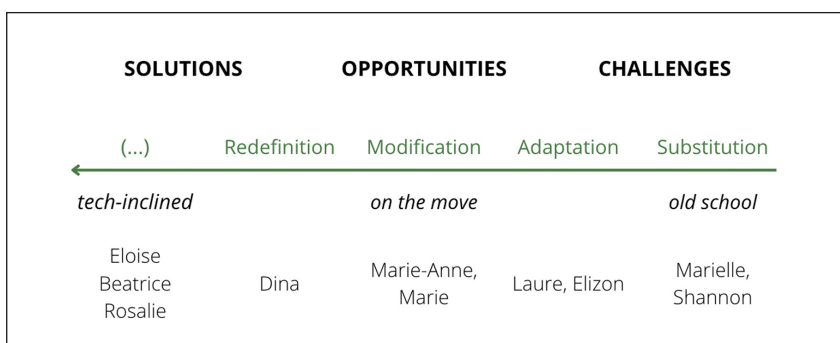
In October 2021, we conducted ten semi-guided interviews with experienced language instructors from five universities in Canada and one in Brazil. These interviews followed two questionnaires that were distributed before (2019) and during the pandemic (February 2020), which focused on language instructors' digital practices in general, and WCF practices specifically (Hamel & Bibeau, 2021). The interviews were in two parts: first, the language instructors describing their ERT context, coping pedagogy, and developed competencies, and second, focusing on their specific WCF practices: namely, digital written tasks, tools, and feedback strategies as well as how they envision their post-pandemic WCF practices.

The interview data were analyzed thematically with NVivo, with reference to the SAMR framework (Puentedura, 2010), which allowed for coding, word clouds, and a careful reading for the patterns to appear.

### 3. Results and discussion

At a glance, our results show that our ten language instructors' digital competencies can be situated on a dynamic continuum of changes (Cf. Figure 1). The ERT context has brought **challenges** for 'old schoolers' (Shannon and Marielle) who, with reference to the SAMR model, show substitution and adaptation digital competencies; **opportunities** for those 'on the move' (Dina, Marie-Anne, and Marie) showing modification and redefinition digital competencies; and/or **solutions** for the 'tech inclined' (Eloise, Beatrice, and Rosalie) who have gone beyond redefinition.

Figure 1. Language instructors' digital competencies on a dynamic continuum of changes



Challenges identified by the 'old schoolers' (n=2) throughout the pandemic had to do, for instance, with not finding the comfort of their traditional practices. One instructor said that she found the time required to learn a new digital tool daunting; she also feared 'wasting time' in the classroom if things did not go smoothly. Other challenges identified were digital fatigue, lack of opportunities for synchronous interactions with students, and lack of engagement from the students, especially concerning the feedback they received. This category of instructors took advantage of informal opportunities to develop their digital practice, for example by reaching out to colleagues and others in their personal network, as well as training opportunities provided by their institution. They did not identify an evolution or change to their practices over the course of the pandemic. One instructor, after this year and a half of online teaching, still described herself as 'very hesitant' (Shannon).

Most of the instructors (n=5) could be placed in the middle category, representing those 'on the move', that is, willing to change. While several instructors expressed

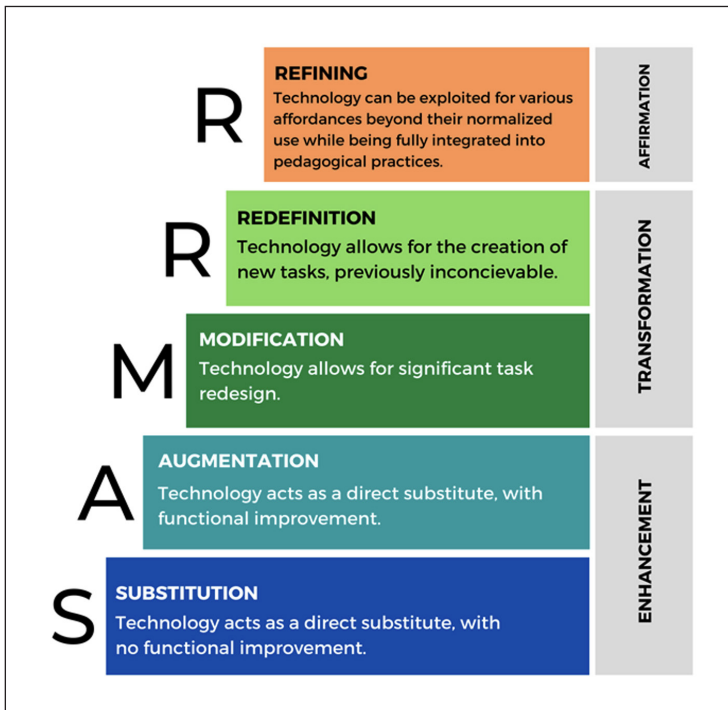
that they found the initial switch to ERT ‘a challenge’, they also felt that they ‘managed’. The situation provided the opportunity to empathize with their students, for example: “ça m’a amené beaucoup à me mettre dans la perspective des apprenants. Davantage, je dirais” [it has helped me a lot in putting myself in the perspective of the learners. More I would say] (Dina). These instructors were able to gain confidence in the new modality, discover new digital tools, and provide more detailed, interactive, and multimodal feedback. They reported using a mix of methods for their own professional development. This included expanding their use of existing competencies, as well as trial and error, which resulted in their being about to challenge the status quo in their university language teaching practices. Overall, the instructors who were placed in this category reported a positive self-perception when teaching online.

In the category of the tech inclined (n=3), the instructors already had a high level of comfort with digital tools and tasks before ERT and found themselves “not in panic mode” (Rosalie). Instead, their familiarity with digital tools and tasks meant they could select from those that they were already familiar with. For example, Rosalie said that she “made a deliberate choice to use less technology because of the students”. The instructors in this category still engaged in professional development, but since they were already starting from a place of comfort with technology, they identified less evolution: “I don’t see myself changed” (Rosalie). Another instructor perceived herself as “comfortable, confident, and efficient” (Beatrice) when teaching online.

These three categories that we identified align with [Jiang and Yu’s \(2021\)](#) profiles of change in teachers’ feedback practices (positive, negative, and unchanged) while bringing continuity in the equation. The teachers are, after all, dynamic agents in their own practice.

Teaching in the ERT context has been transformative for some language instructors. This was especially noticeable from those who we placed in the middle as on-the-move. They had a sufficient level of ease with digital tools and tasks so that they were able to significantly modify, that is, ‘redefine’ their teaching practice. At the same time, the results show that the SAMR model does not completely capture the experience of instructors in ERT, particularly those who are already tech inclined. Hence, we suggest adding an extra step to the SAMR model called *Refining*, with a sidebar description of Affirmation ([Figure 2](#)). This step describes the reality of instructors who already exploited technology for various affordances, had it fully integrated into their pedagogical practice, and had enough tools available to choose those most efficient and best adapted to their context and their students’ needs.

Figure 2. An adapted SAMR+R model considering the ERT context



#### 4. Conclusion

Overall, the results reveal language instructors' perceptions of themselves as teaching professionals in their ERT context: their strengths and weaknesses, challenges and needs. It also shows how some redesigned their learning tasks, making most of the dynamic and collaborative affordances of digital tools and how they engaged in more bidirectional WCF practices with their learners, enhanced by multimodality. It will be interesting to conduct a further study on these language instructors' post-covid digital practices and pedagogy.

#### 5. Acknowledgments

We would like to thank the participants and the research assistants on this project funded by the Social Sciences and Humanities Research Council of Canada.

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# The attitudes of student-teachers to the perceived usefulness of CALL in initial teacher education

Louise Hanna<sup>1</sup> and David Barr<sup>2</sup>

**Abstract.** The attitudes of student-teachers to Computer Assisted Language Learning (CALL) remains an under-explored topic in research literature. This mixed-methods study engaged student-teachers in focus group discussions at commencement and completion of Initial Teacher Education (ITE). These student-teachers were situated across England, Scotland, Wales, and Northern Ireland. Student-teachers' beliefs regarding the perceived value of CALL experienced a considerable transformation between initial and follow-up focus group interactions. Beginning student-teachers collectively portrayed CALL in a complimentary light, with 67.5% of participant dialogue positively coded via thematic analysis. This contrasts with follow-up student-teacher discourse, where only 38.55% of nodes in NVivo were positively coded. Overall, belief changes were most marked for positive categories of CALL. Thus, maintaining optimistic opinions to CALL could be a worthwhile endeavour to promote student-teacher acceptance of digital technologies in language learning.

**Keywords:** CALL, student-teachers, attitudes, perceived usefulness.

## 1. Introduction

The primary aim of this research was to investigate student-teachers' attitudes to CALL. Researchers have stipulated the need for supplementary studies on this population's multidimensional relationship with CALL (Brun & Hinojroza, 2014, p. 236). This study details the cognitions of student-teachers to CALL over the duration of teacher education. This was from commencement to completion of their one-year Modern Language (ML) ITE programme. This research spanned across the four nations of the UK (England, Scotland, Wales, and Northern Ireland).

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**How to cite this article:** Hanna, L., & Barr, D. (2022). The attitudes of student-teachers to the perceived usefulness of CALL in initial teacher education. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouësný, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 141-146). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1449>

## 2. Method

The geographical distribution of ITE establishments was an instrumental consideration in this study. It was vital to represent the UK and its regional diversity. Universities were initially targeted by disseminating an electronic questionnaire to teacher educators at every ML ITE institution in the UK. Responding teacher educators opted in/out of the research project. A focus group methodology was engaged in this investigation to understand student-teachers' views on CALL from September 2020 to June 2021. These focus groups were conducted with 60 student-teachers enrolled in seven ITE programmes. All focus groups occurred in the virtual environment due to COVID-19 restrictions. Thematic analysis ensued in the aftermath of focus group transcriptions. This analysis focused on meaning, patterns, and themes within the research data (Nastasi & Borja, 2017, p. 64). The six stages of Braun and Clarke's (2006) thematic analysis enriched knowledge and understanding of CALL phenomena for the target population (Guest, Macqueen, & Namey, 2012, p. 161).

## 3. Results and discussion

Thematic analysis exhibited many forms of CALL usefulness for student-teachers enrolled on Postgraduate Certificate or Diploma in Education (PGCE/PGDE) courses. A total of 314 (initial) and 345 (follow-up) views of CALL usefulness were individually captured in the NVivo software. There were 345 positive (52.35%), 84 mixed (12.75%), and 230 negative (34.90%) direct quotations and interjections of CALL worth from participants across both focus group stages. Student-teachers' words, phrases, and language were conceptually categorised into 37 corresponding parent nodes of CALL value. The prevalence of these themes of CALL usefulness changed between focus group sessions. This is briefly summarised in Table 1.

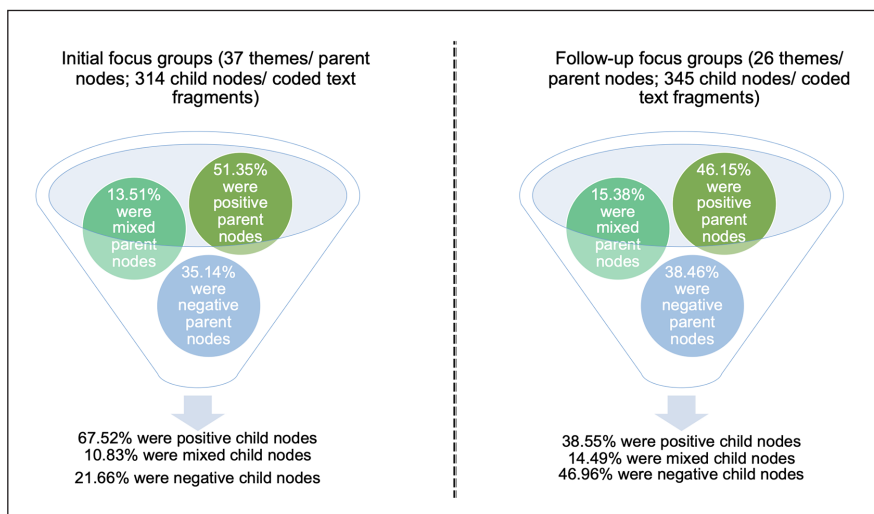
Table 1. The total number of positive, negative, and mixed themes to CALL usefulness

Number of Parent Nodes/Themes Corresponding to CALL Usefulness				
	Positive	Mixed	Negative	Total
Initial focus groups	19	5	13	37
Follow-up focus groups	12	4	10	26

This thematic coding of CALL usefulness in NVivo is presented simply in Figure 1. This qualitative data analysis methodology facilitated a strategic and systematic approach to understand the attitudes of student-teachers to CALL.

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Figure 1. The process of qualitative thematic analysis in NVivo



Empirical data emerged from student-teacher dialogue by converting positive, negative, and mixed thematic codes of CALL into percentage occurrences within focus groups. The transformation of qualitative transcripts into quantitative data allowed the researcher to compare student-teachers' responses across distinct regions meaningfully. In addition, the researcher observed belief variations to CALL usefulness between teacher education start and end. There was a statistically significant reduction of 28.97% in positive viewpoints of CALL usefulness from 67.52% to 38.55%. Negative perceptions of CALL also increased by a quarter (25.30%) in final discussions from 21.66% to 46.96%. This compares to mixed perceptions to CALL value which remained remarkably consistent with only a 3.66% increase between focus group interactions. This displays that student-teachers' positive and negative perceptions of CALL do not remain uniform. Instead, they are subject to considerable fluctuation throughout ITE.

Student-teachers' perceptions regarding the perceived value of CALL experienced a considerable transformation between initial and follow-up focus group interactions. Thematic analysis of focus group data identified 19 positive themes in initial discussions and 12 in follow-up conversations. This decline in positivity to CALL has been supported in literature as constructive perceptions are more susceptible to change (Zhelezovskaia, 2016, p. 48). This reinforces the role of systematic technology preparation for student-teachers to sustain positive perceptions to CALL. Negative opinions of CALL were higher at ITE finish as a point of comparison to complementary views. This has been evidenced in

similar investigations, which correlate increased teaching experience with negative perceptions about CALL (Gjelaj, Buza, Shatri, & Zabeli, 2020, p. 179). This finding has practical ramifications, as higher negativity correlates to lower CALL usage. Such attitudinal shifts highlight that this population's perceptions about CALL are highly changeable, dynamic, and unfixed. Hence, student-teachers are likelier to display favourable yet fragile perceptions of CALL (Breiteig, Grevholm, & Kislenko, 2005, p. 4) Apart from these polarised categories of thinking, there were also uncertain reactions to CALL across opening and closing focus group discussions. However, thematic analysis showed that ambivalence to CALL was more consistent across the lifespan of teacher education. This is in direct contrast to approving and disapproving perceptions of CALL.

Comprehending the favourable, ambivalent, and unfavourable perceptions of this population is of critical importance in making sense of why student-teachers behave the way that they do with digital technologies. This is because their attitude to CALL depicts a student-teacher's state of readiness towards digital technology adoption. In fact, the belief systems of student-teachers are not isolated from their CALL classroom activities (Hell, Godhe, Wennås, & Brante, 2021, p. 9). This means that student-teachers' perceptions can only be understood from both their words and their actions. Thus, belief investigations within the field of teacher education are crucial as student-teachers' ways of thinking about CALL correlate with classroom usage (Vidal-Hall, Flewitt, & Wyse, 2020, p. 168). These perceptions of CALL can determine student-teacher success or failure with digital technologies.

## 4. Conclusions

In conclusion, participants demonstrated complimentary cognitions of CALL at PGCE/PGDE onset. These favourable mindsets to CALL have been demonstrated across similar research investigations (Lowther, Inan, Strahl, & Ross, 2012, p. 23). This is a meaningful finding as positive beliefs have been associated with a greater likelihood of CALL classroom behaviours (Wilson & Donkin, 2021, p. 51). At the same time, however, approving beliefs do not always equate to actual CALL usage for classroom practitioners. However, this was not the case at ITE conclusion. Crucially, favourable opinions of CALL decreased in follow-up discussions. Literature has confirmed that positive attitudes to digital technologies reduce throughout training programmes (Wittenberg et al., 2021, p. 4). Overall, the triangulation of focus groups with student-teachers gathered compelling evidence into the student-teacher mindset to CALL.

## 5. Acknowledgements

We would like to thank Ulster University and the participation of student-teachers in this research project.

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# Online collaborative writing: learners' perceptions and their changes using data visualization tools and interviews

Takehiro Hashimoto<sup>1</sup> and Takeshi Sato<sup>2</sup>

**Abstract.** This study investigated L2 learners' perception changes at each stage of online collaborative writing. Previous studies revealed the familiarity of L2 collaborative learning with Information and Communication Technology (ICT), whereas few described at which stage of the learning process L2 learners' perceptions change. Therefore, this study examines how the learners' attitudes and perceptions change at certain phases of collaborative learning and whether these changes affect the success or failure of their L2 collaborative learning. This study analyzed two questionnaire surveys before and after the learning activity, observed the collaborative learning processes via visualization tools, and conducted semi-structured interviews for participants to reflect on their learning processes and perceptions of collaborative writing. The mixed research analyses demonstrate that advancing a particular stage leads to the learners' linguistic awareness and the shift of their attitudes more positively. The findings show the factors and stages determining the success of L2 online collaborative learning.

**Keywords:** collaborative writing, mixed methods research, data visualization, language awareness.

## 1. Introduction

Collaborative learning is one of the major tasks in language learning. The teachers have conducted collaborative learning tasks for decades, and recent ICT

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**How to cite this article:** Hashimoto, T., & Sato, T. (2022). Online collaborative writing: learners' perceptions and their changes using data visualization tools and interviews. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 147-153). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1450>



development and online instructions have boosted online collaborative writing and research (Arnold, Ducate, & Kost, 2012; Kessler & Bikowski, 2010; Lund, 2008; Yim & Warschauer, 2017). However, learners' involvement during a collaborative task remains unclear. This study investigated the shift in L2 learners' perception of online collaborative writing by focusing on the phases of the collaborative writing process.

## 2. Method

Our research recruited 98 undergraduate students in two Japanese universities specialized in economics (n=38) and engineering (n=60). Their L2 competencies are estimated to be lower-intermediate (A2) to intermediate (B1).

The participants were asked to collaboratively write an essay consisting of several paragraphs using Google Docs for two weeks outside the classroom. They shared the same documents on their computer, decided their roles in their classes, and wrote the essay individually and in parallel. Both groups of university students conducted the same activities, while the topics given were slightly different; in one university, the participants were asked to translate the essays their instructor wrote in Japanese into English. The other participants from a science university, on the other hand, chose the topic by themselves and wrote their essays in English.

This study employed a mixed method research, integrating a quantitative questionnaire survey and qualitative interview research. First, we conducted the questionnaire survey before and after the learning period. The questionnaire was developed to examine the perceived usefulness, attitudes toward, and reluctance to collaborative learning. Then one participant from each group was asked to join a semi-structured interview. Each participant was asked to review and elaborate their writing process and their thoughts on the collaboration.

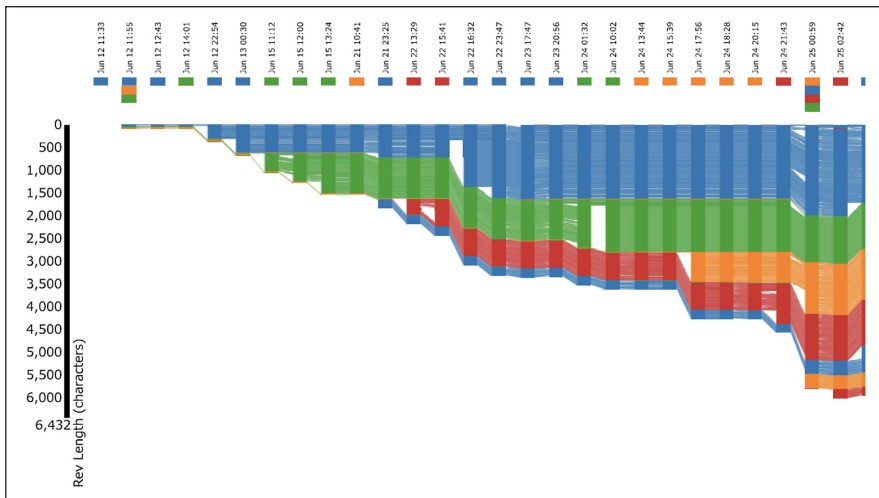
To observe participants' collaborative writing processes, we utilized two online tools on Google Docs: DocuViz (Wang et al., 2014) and AuthorViz (Wang et al., 2018; Yim & Warschauer, 2017). DocuViz counts the number of words the participants wrote and edited during their writing period. AuthorViz can detect the author who wrote a specific part of the collaborative essay. These tools help the examinees to observe the collaborative writing process. As for the questionnaire, we analyzed the survey results by dividing them into positive and negative responses. Interviews were coded by extracting relevant items and conceptualized using grounded theory. Finally, we examined the relationship

between the questionnaire and interviews. The results of our quantitative and qualitative research are described in the next section.

### 3. Results and discussion

Figure 1 shows how one group conducts the collaborative task. The number of characters, or location of words in the essay was painted with each participant's color from top to bottom. As seen in Figure 1, the progress of the collaborative writing is visualized according to the timeline of writing. All participants joined the writing task one by one in Figure 1, which suggests this group planned the task well and successfully conducted the collaborative task with equal contributions. Not every group shows a similar pattern. Only a few members joined the task in some groups, or the contribution of each member is only once in another group. The overall progress can be grasped when used with a visualization tool.

Figure 1. Docuvisz visualization for how one group develops their collaborative writing



The questionnaire items in Figure 2 are as follows: usefulness for collaborative writing, such as improvement of grammar, contents, or organization (Q1-Q3); attitude to collaborative writing (Q4); preference to collaborative writing (Q5); and resistance of interaction with others (Q5-8). As for the questionnaire, the results of Q1 to Q4 decreased. Meanwhile, the results of Q5 did not change. The results of

their resistance (Q5-8) differed – the resistance to being read or revised by peers decreased, but the sense of inequality in contribution increased.

Figure 2. Positive responses (N1=75, N2=76)

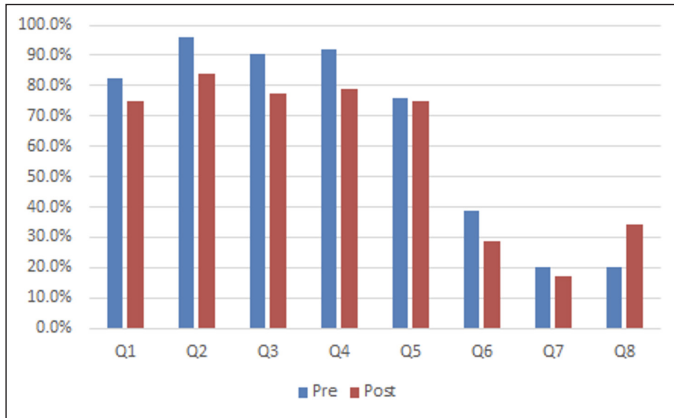
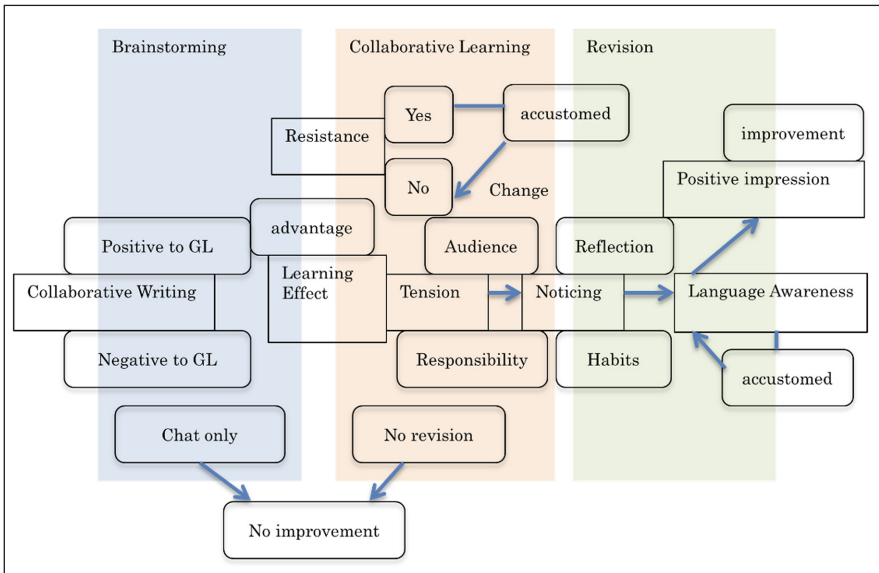


Figure 3. Analysis of interview based on grounded theory



The qualitative result of the interview in Figure 3 above shows how participants’ perception changes in each stage of collaboration, i.e. brainstorming, collaboration,

and revision phases. In the brainstorming phase, participants had positive or negative perceptions of collaborative learning. Participants with positive perceptions noticed the advantage of collaboration. This advantage affected their collaboration through the subsequent two phases. On the other hand, participants with negative perceptions only talked about the task and did not improve their tasks or collaborative processes anymore. Their negative perception is due to member relationships, lack of time, and uneven contribution to the task.

When participants were in the collaboration phase, participants who were positive toward collaboration connected their perception to the learning effect. Their positive beliefs were that (1) it was good to read other participants' sentences; (2) it would improve their proficiency when they showed their writing to others; (3) they are getting accustomed to the collaborative task; or (4) it is good to hear advice from many other perspectives. Those beliefs all constituted their learning effect. Starting from this learning effect, three aspects of tension, noticing, and language awareness were repeated through collaborative learning and revision phases. Tension, consisting of audience, evaluation, and responsibility, would enhance participants' concentration. [Debski \(2006\)](#) claims an audience can be L2 learning motivation because they provide immediate support. Noticing has a somewhat broad meaning. Participants noticed new or different ways of writing, found mistakes objectively, recognized the lack of grammar or phrases, and obtained different lines of thought. Those noticing aspects led to the positive participants' language awareness in the revision phase. Participants could recognize their own or other participants' writing styles and choice of words, which increased their writing variation and urged self-reflection on their learning. Participants became aware of the organization of an essay, self-revision, syntax, and dictionary use. The more participants were accustomed to the task, the more they were conscious of language. The language awareness increases the positive impression of collaboration on them and improves their learning. If participants did not revise their essays, they could not improve their collaboration.

Although some participants did not resist collaboration from the beginning, some did. Some participants lacked self-confidence in their English proficiency. Others were reluctant to edit other members' sentences, partly because they had less confidence in their proficiency, did not know how to revise, or were afraid of revising their peers' drafts. That resistance, however, in many cases changed into their acceptance of editing. Some participants thanked other members for revising their writing, whereas others thought revision made them realize their lack of competency. In general, participants got accustomed to collaboration and decreased their resistance.

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The questionnaire results suggest that the perception of usefulness and effectiveness decreases as a whole, because not all students have good impressions of collaborative learning. The data visualization and interview results, however, revealed that those with positive perceptions could obtain the learning effect of tension, noticing, and language awareness. Their positive perception could provide them with a good opportunity for collaboration, learning, and self-reflection.

## 4. Conclusions

Our mixed method study verified the shift in learners' perceptions toward L2 collaborative writing and examined how learners' awareness changes through the phases of the writing process that lead to successful collaborative writing. As a result of our analyses, when learners have a positive perception of collaboration, they are able to develop their language awareness gradually across each phase, leading to successful learning. Additionally, our research confirmed the usefulness of the data visualization tools in clarifying the direction of the analyses. Therefore, more mixed method research will be conducted for technology-enhanced L2 learning and teaching research using such visualization tools.

## 5. Acknowledgments

This research was supported by JSPS KAKENHI 18K00778.

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# Comparative analysis of students' views of online learning in the first and second Covid-19 semesters: examples from Türkiye, Poland, Republic of North Macedonia, and Bosnia and Herzegovina

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**Abstract.** The abrupt change from face-to-face to Online Learning (OL) in the emergency COVID-19 semester surprised and forced students to alter their study habits. Then came the second online period, and students were expected to be happier and more successful since now they were familiar with OL. Was this the case? Had the ways students learned, their perceptions of human interactions among teachers and students in OL, their opinions on the learning environment and their computer literacy changed? Our paper aims to answer those questions using comparative analyses of data sets from the first and second OL periods and attempts to uncover the positive and negative shifts and the topics that remained unchanged. The study's findings show that COVID-19 related educational changes had multidirectional influences on students' learning, ingroup interactions, and views about education and OL. Hopefully, the empirical data collected in this study will provide valuable information about OL's immediate and prolonged effects.

**Keywords:** Covid-19 related online education, teacher-student interactions, comparative analysis, adaptation to educational changes.

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**How to cite this article:** Hatipoğlu, Ç., Gajek, E., Delibegović Džanić, N., & Milosevska, L. (2022). Comparative analysis of students' views of online learning in the first and second Covid-19 semesters: examples from Türkiye, Poland, Republic of North Macedonia, and Bosnia and Herzegovina. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thoušný, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 154-161). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1451>

## 1. Introduction

The first COVID-19 period of OL and teaching (2019-2020 spring semester) was characterised by the fast and stressful adaptation of teachers and learners to the new environment. To provide the best education they could, teachers learned how to use digital technologies and modify their teaching strategies (Hatipoğlu et al., 2021). Students acclimated to the new learning context without face-to-face contact with their teachers and peers and without ongoing support from their institutions (Miloshevska et al., 2020).

The second semester of online education (academic year 2020-2021) was characterised by a higher level of customisation to the prolonged online education in countries such as Australia, the USA, Canada (Hickling et al., 2021), and Latvia (Baranova, Kobicheva, & Tokareva, 2021). However, the OL environments in Türkiye (TUR), Poland (POL), Republic of North Macedonia (RNM), and Bosnia and Herzegovina (B&H) have been largely unexplored. The present study aims to uncover the specific similarities and/or differences in students' perceptions of the processes taking place in the two online teaching periods. It compares the results of surveys administered in TUR, POL, RNM, and B&H among university students.

The research questions were: how do English language learners with diverse cultural and language backgrounds in TUR, POL, RNM, and B&H formulate their opinions on:

- interactions among teachers and students;
- methods utilised by students for learning;
- difficulties students faced;
- students' opinions regarding the OL environment; and
- students' evaluation of their computer literacy.

## 2. Method

### 2.1. Data collection

The first dataset was collected in May-June 2020 (henceforth, the first period – FP) and the second in December 2020-January 2021 (hereafter, the second period – SP). To ensure parallelism among the datasets collected in TUR, POL, RNM, and B&H, a cross-culturally appropriate web-based questionnaire in English was

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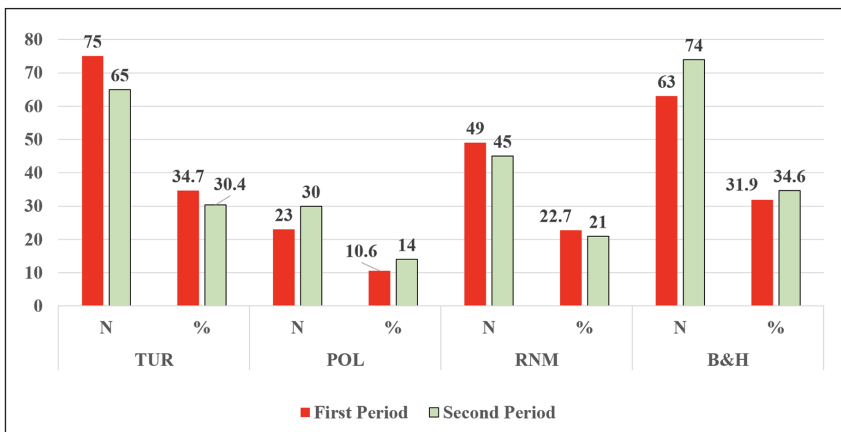


designed specifically for this study. The questionnaire, which included checkbox, Likert scale, and open-ended items, was used in both periods.

## 2.2. Participants

The number of participants in both periods was similar to each other (FP=216, of which Males=40.2%, Females=59.2%; and SP=214, of which Males=36%, Females=61.7%) and their country distributions were as shown in [Figure 1](#).

Figure 1. Participants



## 2.3. Data analysis

Two sets of descriptive analyses were performed on the data to demonstrate the common tendencies and the peculiarities appearing locally: across periods and countries. Due to word number restrictions, this paper presents across-period analyses with combined country results.

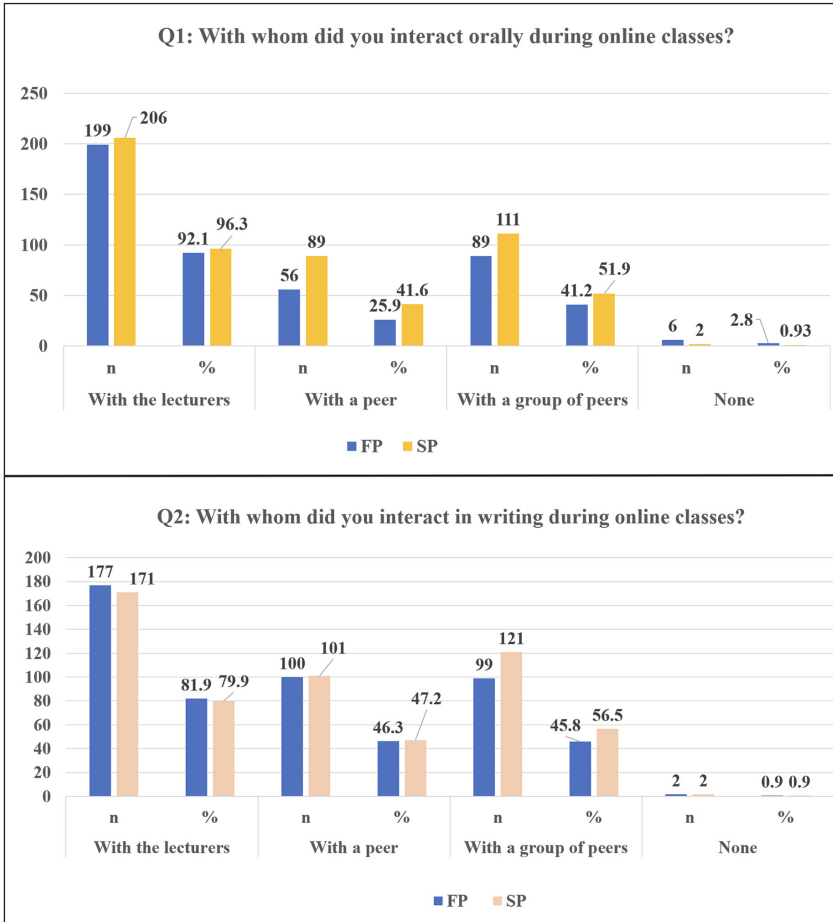
## 3. Results and discussion

### 3.1. Interactions among teachers and students

[Figure 2](#) shows that there are both similarities and differences between the examined periods. The similarity is that students interacted orally and in writing the most with their lecturers in both online periods. The key differences are

observed in the levels of interaction between individual students and student groups. The oral interaction between individual students increased 1.6 times, and group interactions 1.3 times in SP. Written interaction ‘within a group of peers’ also increased 1.2 times in SP. With these findings, we can argue that students’ autonomy and dependence on each other increased in SP.

Figure 2. Similarities and differences between the examined periods



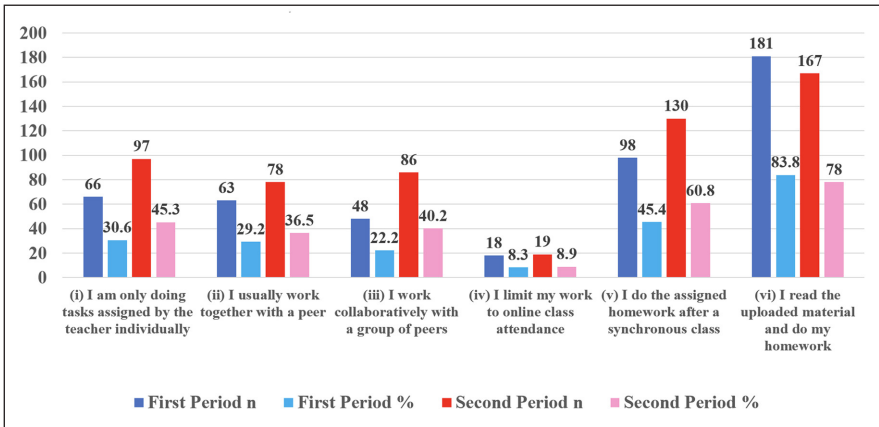
### 3.2. Methods utilised by students for learning

Students’ autonomy and dependence on each other increased in SP of online teaching as seen from the data presented in Figure 3. Individual and collaborative work among students improved considerably, and 18% more students stated that

they worked collaboratively with a group of peers (Statement iii), and 7.3% said they worked together with a peer (Statement ii) to learn the material.

The percentage of the students who completed their homework after synchronous classes increased by 15.4% (Statement v). The only less frequent activity in SP was Statement vi.

Figure 3. Students' autonomy and dependence on each other: 'how do you study?'



Possibly these increases are because students were more used to online teaching in SP and knew the importance of working individually and doing their homework to master the material.

### 3.3. Difficulties students faced

Similar to [Kim and Asbury \(2020\)](#), students reported facing difficulties in the following areas.

- Technical problems.** More students experienced technical problems such as unstable internet connection and limited access to the internet in SP (FP=65.3%, SP=81.8%). Also, a higher percentage had limited access to technology and devices (FP=15.3%, SP=19.6%).
- Psychological problems.** The number of students who stated they faced psychological problems such as 'lack of motivation' (FP=67.1%, SP=73.4%), 'inability to concentrate because of boring classes' (FP=44.9%, SP=55.1%), and 'lack of organisation of their part' (FP=35.6%, SP=39.7%)

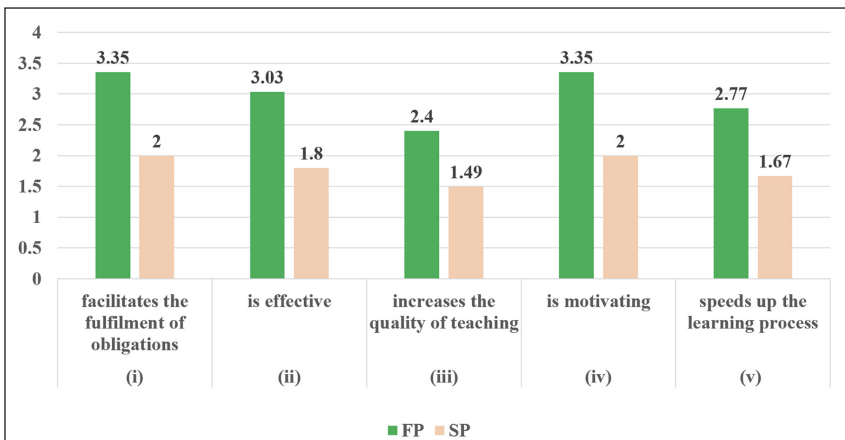
increased in SP. A higher percentage of students also reported being overwhelmed by the number of online classes (FP=58.8%, SP=69.6%).

- **Institutional problems.** The number of students confused by lack of organisation (FP=35.6%, SP=39.2%) and support from the institution (FP=27.8%, SP=36.5%) also increased in SP.
- **Instructional problems.** More students reported a lack of support from the teachers (FP=34.3%, SP=43.9%) in SP.

### 3.4. Students' opinions regarding the OL environment

Students' views related to OL were elicited via five-point Likert scale questions (five=strongly agree, one=strongly disagree), and a comparison of the mean scores related to the items showed a negative shift pertaining to all of them (Figure 4).

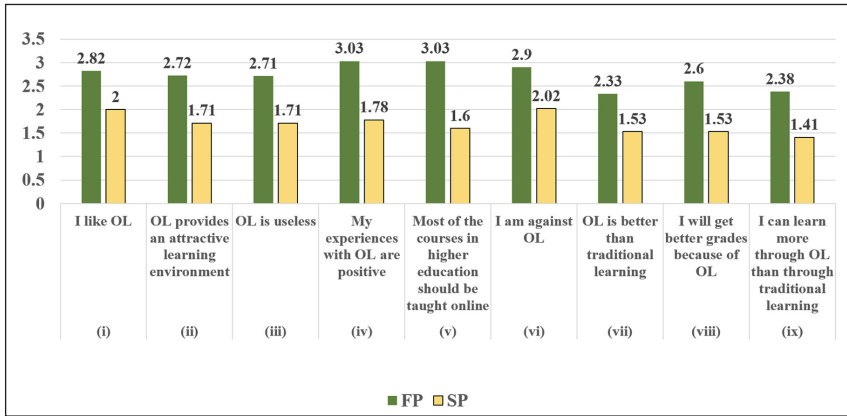
Figure 4. Students views about OL



The means do not provide detailed insights into the specificity and backgrounds of each country's changes. However, they illustrate well the general tendencies and reveal that students became more critical, neutral, or indifferent to OL in SP.

Five-point Likert scale questions were also employed to reveal students' opinions about OL. Similar to the set described above, the results showed a more negative evaluation by the students of OL in SP except for items iii and vi, where they disagreed less that 'OL is useless' and that they are 'against OL' (Figure 5).

Figure 5. Students’ opinions about OL



### 3.5. Students’ evaluations of their computer literacy

When asked to evaluate their level of computer literacy in FP, 54.9% of the students identified it as ‘Advanced’ and 41.6% as ‘Intermediate’. Almost opposite distribution was determined in SP. Only 40.3% classified their computer literacy as ‘Advanced’ while 56.4% chose ‘Intermediate’ in SP.

## 4. Conclusions

The findings show that COVID-19 related educational changes influenced students’ learning to a great extent (cf. Cesco et al., 2021). However, the changes are multidirectional. On the one hand, the students were more teacher-dependent, but they also collaborated with individual peers and a group of peers more often, both orally and in writing, in SP. A holistic look at the difficulties and opinions they expressed in both periods allows for various interpretations. The psychological problems they observed might influence the other aspects of learning. With a lack of motivation, concentration, and self-organisation, all problems might grow, increasing the feeling of ‘supportlessness’, and decreased self-confidence even in their computer literacy. As all opinions tended to be either more neutral or critical in SP, we may infer that the students became more pessimistic, irreflective, or indifferent towards the learning environment they experienced. On-campus experience and a connection with universities are things that students missed during the online FP and SP. The study’s findings suggest that in universities, in-class instructions, including video-recorded ones, should be more common in the future than instruction solely available online.

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# Automatic exercise generation to support macro-adaptivity in intelligent language tutoring systems

Tanja Heck<sup>1</sup>, Detmar Meurers<sup>2</sup>, and Florian Nuxoll<sup>3</sup>

**Abstract.** Foreign language teaching achieves best learning outcomes when individual differences of learners are taken into account. While it is difficult for teachers to support internal differentiation in the classroom, digital tools can adaptively propose individual learning paths through activities so that students can practice with appropriately challenging exercises. But how can sufficiently varied, systematically parametrized exercises be provided to enable a system to match them to individual learner needs? We present an approach for high-variability exercise generation that transforms a single specification into a multitude of exercises varying in complexity. The approach is currently being evaluated in a randomized controlled study in regular German seventh grade English classes, facilitating a systematic empirical exploration of adaptive exercise complexity in relation to learning outcomes.

**Keywords:** intelligent language tutoring systems, ICALL, exercise generation, macro-adaptivity.

## 1. Introduction

Language instruction is challenged by the need to accommodate heterogeneous groups of students who differ in optimal learning paths and required support to achieve the best possible learning outcomes. Individual differences play a major role

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**How to cite this article:** Heck, T., Meurers, D., & Nuxoll, F. (2022). Automatic exercise generation to support macro-adaptivity in intelligent language tutoring systems. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thoušný, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 162-167). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1452>

in second language learning with students differing in a number of characteristics, including motivation, background, general language aptitude, and cognitive resources (Dörnyei, 2005). Yet instructors struggle with internal differentiation in classroom teaching as they generally lack time, suitable diagnostics, and appropriately adaptive materials. To speed up learning and improve learning outcomes, Intelligent Language Tutoring Systems (ILTS) aim to overcome these challenges by matching exercise properties to learner characteristics in an attempt to identify the best practice material at any time, for any student. Considering the vast space of exercise characteristics and combinations thereof, the availability of systematically parametrized learning material constitutes a major bottleneck for learner-adaptive digital systems.

A number of ILTS have been developed for foreign language learning. Examples successfully used in real life include Heift's (2010) E-Tutor, Nagata's (2009) Robo-Sensei, and Amaral and Meurers's (2011) Tagarela. Such systems can in principle support two types of adaptivity, micro- and macro-adaptivity. Most systems focus on providing scaffolding feedback that successively guides a learner toward the correct answer, i.e. micro-adaptivity. Adaptive exercise sequencing attempting to always select activities in the learner's zone of proximal development has received less attention. The challenge with such macro-adaptivity consists in a shortage of different activities which, if overcome, would allow adaptive systems to provide exercises whose nature and complexity matches a learner's characteristics and proficiency. Manually creating all these exercises quickly becomes unfeasible considering the number of possible combinations of exercise parameter settings. A systematic approach, however, could generate a multitude of activities from a single, well-defined specification. To this purpose, we present an approach for high-variability exercise generation with the goal of efficiently generating practice material for user-adaptive ILTS targeting beginning to intermediate learners.

## 2. System description

The approach focuses on exercises practicing grammatical concepts from the official English curriculum in Germany. The language-aware search engine FLAIR (Chinkina & Meurers, 2016) assists users in identifying texts rich in pedagogically relevant linguistic structures. Although, at this point, the high-variability exercise generation requires manually compiled specifications, FLAIR thus provides a natural system context for an exercise generation functionality. To use the new exercise generation in FLAIR, users upload a specification file

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in Excel or JSON format and select the targeted grammatical concept and the output file format. The algorithm generates abstract exercise definitions from the specification for the entire space of pre-defined parameterizations. Parameters influencing exercise complexity include: (1) the exercise type, including memory, multiple choice, underline, jumbled sentences, categorization, and fill-in-the-blanks; (2) parameters specific to exercise types, such as the number and type of distractors for multiple choice activities or the nature and position of hints for fill-in-the-blanks exercises, e.g. lemmas above the exercise or behind the gaps; and (3) parameters specific to a grammatical concept, e.g. which clause is turned into the relative clause of a relative sentence, clause order in conditional sentences, or whether the exercise focuses on practicing verb forms in if-clauses or in main clauses.

Figure 1 takes relative clauses as an example and outlines how different exercise types make use of different specification components for exercise generation. Memory activities, for example, use the information highlighted in bold font: the chunks of both clauses and the relative pronoun.

Figure 1. Parameter usage of different relative clause exercises

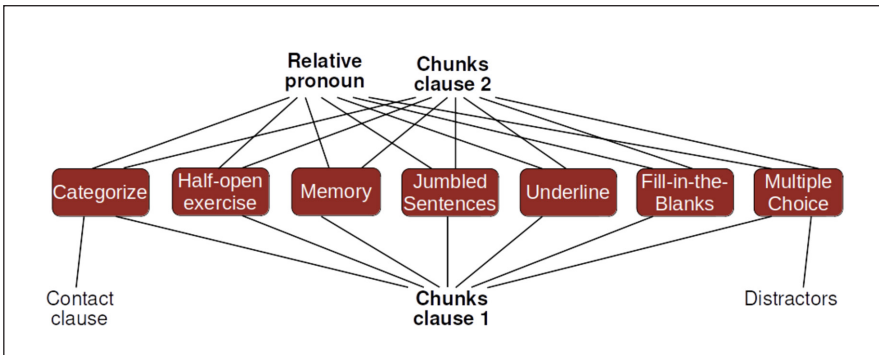
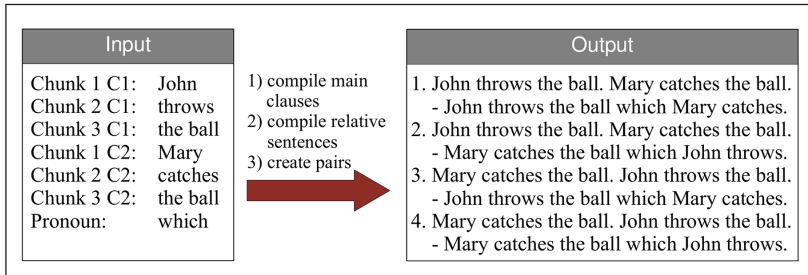


Figure 2 below illustrates how this subset of specification components is used to generate four distinct memory exercises for relative clauses. The parameters responsible for this variability consist in the order of the main clauses as well as in the choice of clause used for the relative clause in the relative sentence.

Depending on the selected output format, the algorithm transforms the generated abstract exercise definition into H5P files, which can be uploaded to any learner management system supporting the standard, or a proprietary XML format compatible with the FeedBook ILTS (Rudzewitz et al., 2018).

Figure 2. Generation of Relative clause Memory exercises from a specification



### 3. Evaluation and discussion

The approach targets grammatical concepts from the seventh grade English curriculum in Germany. The current implementation covers relative clauses with focus on pronoun usage or contact clauses, and conditionals practicing verb forms of a given conditional type or the differentiation between conditional types. The specifications for different foci on relative clauses differ slightly due to differing requirements of the resulting exercises. The specifications for conditionals can in principle be re-used if the grouping of specification items is altered in such a way that all items of a group belong to the same or to different conditional types. For relative pronoun practice, the algorithm supports automatic generation of 19 exercises from a single specification. Contact clauses yield three different exercises. For verbs of conditional sentences, the algorithm generates 48 exercises per specification. Exercises practicing the identification of conditional types come in 39 variants. This promising space of exercises is currently being empirically tested in a project related to the FeedBook focused on adaptive sequencing. In line with the setup advocated in [Meurers et al. \(2019\)](#), we are currently conducting a year-long randomized controlled field study in regular English classes in secondary schools.

Limitations of the current approach include the handling of discourse phenomena such as coreference and cohesion. Example 1 illustrates that for conditional sentences, the semantic validity is challenged if the first clause contains pronouns referring to an antecedent in the second clause. Also related to clause order, Example 2 illustrates how cohesion can become an issue with de-contextualized relative clauses if the clauses have a natural order which is violated by the generated relative sentence. An additional limitation is introduced by the naive nature of the exercise generation algorithm which cannot resolve co-references unless the surface forms are identical, so that Example 3a cannot be transformed into a relative sentence but instead requires a specification such as given in Example 3a'.

- (1) a. If Tommy found his glasses, he would wear them.  
b. # He would wear them if Tommy found his glasses.  
b'. Tommy would wear his glasses if he found them.
- (2) a. The boy who came in greeted everyone.  
b. # The boy who greeted everyone came in.
- (3) a. **The boy** came in. **He** greeted everyone.  
a'. **The boy** came in. **The boy** greeted everyone.

We are therefore currently introducing further natural language processing analyses to overcome these limitations and to make it possible to add parameters that are characteristic of developmental sequences discussed in the second language acquisition literature (e.g. [Pienemann & Johnston, 1986](#)), such as the use of negation or interrogative structures. In addition, we are implementing a user interface to facilitate specification authoring and to avoid formatting issues of the input files. This interface will also merge different specifications of a grammatical concept and thus allow even greater exercise variability per specification. Since the exercise generation is already embedded into a language-aware search engine, another strand of current work focuses on the generation of exercises from authentic texts.

## 4. Conclusions

We have presented an approach to support macro-adaptivity in ILTS through high-variability exercise generation. In future work, we plan to extend the approach to a broader range of grammatical concepts. We also intend to evaluate the influence of different parameters and their interaction on exercise difficulty, approximated by student performance. To this purpose, we hope to gain first insights from the ongoing field study which we will then broaden through analyses based on controlled lab studies on exercises with systematically manipulated parameters.

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# Analyzing user interactions to estimate reading time in web-based L2 reader applications

Nora Hollenstein<sup>1</sup> and Mircea F. Lungu<sup>2</sup>

**Abstract.** We propose to use reading time as a metric to report progress in language learning applications. As a case study we use a web-based application that enables learners of a foreign language to read texts from the web and practice vocabulary with interactive exercises generated based on their past readings. The application captures generic interactions with the web page (e.g. switching to a different tab) but also interactions directly related to language learning (e.g. clicking on a word to get a translation). We propose two metrics for approximating reading times based on user interactions with the web application. We analyze the correlation between these metrics and other interaction metrics and show that active time is the best metric for estimating the user's actual involvement with the texts and that it can be approximated from interaction metrics.

**Keywords:** reading time, second language learning, web-based learning, user interactions.

## 1. Introduction

We propose to use reading time as a metric to report progress to learners and teachers in language learning applications and in particular, in applications that support extensive reading of authentic texts in L2. Given that reading time is a good predictor of learning (Wallot et al., 2014), one simple but meaningful way to provide feedback to the readers is to show them the time they spend reading in the language of their choice. Measuring the reading time in the wild, as opposed to measuring it in controlled experiments in the lab, is however challenging: one must handle the fact that the learner behavior can only be estimated but not fully known.

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**How to cite this article:** Hollenstein, N., & Lungu, M. F. (2022). Analyzing user interactions to estimate reading time in web-based L2 reader applications. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 168-173). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1453>

As a case study, we use a web-based application named Zeeguu<sup>3</sup>; as mentioned in [Lungu, van den Brand, Chirtoaca, and Avagyan \(2018\)](#), this web-based application enables learners of a foreign language to read texts from the web about topics they are interested in and practice vocabulary with interactive exercises based on their past readings ([Lungu & van Engen, 2019](#); [Lungu et al., 2018](#)).

We deployed this application in the wild for more than one year and for more than 606 users. The non-controlled environment means multiple challenges to reading speed estimation, e.g. users might start reading an article, but then go to make a coffee, or switch to a different tab to check social media. Sometimes readers will open an article, scroll through it for a bit, and then close it because it is not interesting to them.

To be able to estimate reading time, the web application uses telemetry regarding a variety of user interactions. These interactions include: when an article is opened and closed, when the browser tab is out of focus, and recording when the user provides feedback on the article. The application also captures interactions directly related to language learning, e.g. clicks on words and phrases for getting translations and pronunciations. Finally, the application also presents the user information about their reading time with the help of an activity dashboard.

## 2. Method

### 2.1. Data

The data used for analysis can be found in the July 2022 Zeeguu Anonymized DB Dump<sup>4</sup>. The analysis is based on data from 606 highschool and university students from the Netherlands and adult learners from several language schools in Denmark who were studying French, Dutch, and Danish as foreign language. Their data can be found as CSV files in the *reading-times--eurocall22* folder at <https://github.com/zeeguu/studies>.

### 2.2. Reading time approximation

Eye tracking technology would provide a perfect measurement of reading time (e.g. [Hollenstein, Barrett, & Björnsdóttir, 2022](#)), but in its absence, we have to use

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3. Web: <https://zeeguu.org>; source code: <https://github.com/zeeguu>

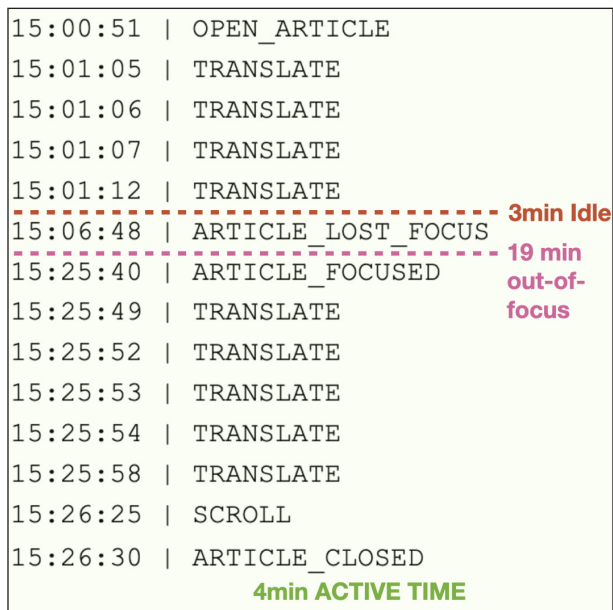
4. Found at <https://github.com/zeeguu-ecosystem/Data-Releases>

approximations based on user interactions. Based on the collected interaction data we evaluate two alternative ways.

- **Apparent time**: the full duration between opening and closing a text, used in past works not specific to language learning (Hwang, Tsai, Tsai, & Tseng, 2008; Sheard, Ceddia, Hurst, & Tuovinen, 2003).
- **Active time**: the result of subtracting from apparent time (1) out of focus time – time spent on other windows or tabs and, (2) idle time – time when a user does not interact with the system for more than a minimum threshold<sup>5</sup>.

Figure 1 shows all the events that are recorded from the interaction of the user with ID 3083 (from the DB dump mentioned above) with the article with ID 1973640.

Figure 1. An example of a very large difference between Apparent Time (26min) and Active Time (4min)



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5. Threshold of 2min in Zeeguu is used for the analysis in this paper

### 3. Reading time versus other metrics

We investigate whether any metric derived from the events that we collect can be used to predict reading time. This would be useful for estimating reading time when there is no previous user data about a given article.

We use Spearman's correlation to measure the strength and direction of the association between two variables computed from user interactions. These reading time measures are averaged across all events/readers for a given article. We consider the following metrics for each article:

- `word_count`, the number of words in a given article;
- `liked`, the number of times the article was liked by readers;
- `translated`, the number of words that were clicked to be translated in this article;
- `spoken`, the number of words that were clicked to be pronounced in this article;
- `opened and closed`, the number of times a given article was opened or closed;
- `difficulty`, the (between 1 and 100) normalized Flesch Kincaid reading score (higher=easier to read), as well as perceived difficulty (easy/ok/hard, the user feedback about their perceived difficulty after reading an article);
- `time_to_first_translation`, the time before the first translation occurs, i.e. the duration between opening an article and the first translation.

**Table 1** presents the correlation coefficients  $\rho$  between these variables across all articles of all languages. Note that the correlation values are generally moderate, since the data is sparse, i.e. many fields are empty because it is optional for the user to give feedback or like an article. These results show that text difficulty does not correlate with reading times, presumably because readers automatically choose articles they feel confident they can finish in reasonable time. However, the number of words a user clicks to get a translation or pronunciation correlates with text difficulty suggesting that the used difficulty metric is a good predictor of actual perceived difficulty.

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The strongest correlation in [Table 1](#) is seen between word count and reading time (both the reading time metrics in this case). However, ACTIVE\_TIME correlates most strongly with word\_count and text difficulty suggesting that it is a better measure for estimating the actual time the users are involved with the text.

The results also show that users are more likely to like an article if they read it faster and need less translations. This hints at the importance of ensuring that the articles are of the right difficulty for the users.

Table 1. Correlation analysis

var1	var2	Spearman's $\rho$
word_count	difficulty	-0.05*
word_count	translated	0.20*
word_count	APPARENT_TIME	0.42*
word_count	ACTIVE_TIME	0.42*
word_count	time_to_first_translation	0.26*
difficulty	liked	0.05*
difficulty	translated	-0.18*
difficulty	spoken	0.17*
difficulty	opened	-0.19*
difficulty	closed	-0.18*
difficulty	APPARENT_TIME	-0.06*
difficulty	ACTIVE_TIME	-0.07*
difficulty	time_to_first_translation	-0.04*
liked	translated	-0.11*
liked	APPARENT_TIME	-0.03*
liked	ACTIVE_TIME	0.06*
liked	time_to_first_translation	-0.10*
translated	spoken	0.27*
translated	APPARENT_TIME	0.39*
translated	ACTIVE_TIME	0.42*
translated	time_to_first_translation	0.81*
spoken	APPARENT_TIME	0.30*
spoken	ACTIVE_TIME	0.27*
spoken	time_to_first_translation	0.44*
APPARENT_TIME	ACTIVE_TIME	0.84*
time_to_first_translation	APPARENT_TIME	0.59*
time_to_first_translation	ACTIVE_TIME	0.59*

Significant results ( $p < 0.01$ ) marked with \*

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## 4. Conclusions and future work

Our results suggest that active reading time is a better metric than apparent reading time and that it is possible to approximate reading time from both text-based and user-derived metrics. In the future, we plan to investigate personalizing the reading time estimation by applying prediction models based on a single user's past text interaction. We also plan to investigate presenting to a user reading times that other users required for a given article, in the same way in which sports tracking applications report comparable users achievements (West, 2015).

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# Using an online high-variability phonetic training program to develop L2 learners' perception of English fricatives

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**Abstract.** This study investigated the degree to which Japanese learners of English accurately perceive English fricatives over time and the extent to which fricatives were misidentified. To train and measure perception skills, an online high-variability phonetic training program was used in an English as a Foreign Language (EFL) class in Japan for eight weeks. The results indicated that learners' perception of some of the fricatives improved over time, while others remained difficult to distinguish from other fricatives. Implications for EFL pronunciation instruction are considered.

**Keywords:** pronunciation, perception, fricatives, high-variability phonetic training.

## 1. Introduction

For Japanese learners of EFL, pronouncing English fricatives such as [f], [v], [θ], and [ð] can be challenging (Fujinuma & Wilson, 2010; Kawasaki & Tanaka, 2012; Lambacher, Martens, Nelson, & Berman, 2001). Flege's (1995) speech learning model predicts that second language (L2) sounds that are similar to first language (L1) sounds are relatively harder to master, while new sounds that are different from L1 sounds are relatively easier. It has often been observed that L1 Japanese speakers replace the English dental fricative /θ/ with the fricative /s/, and /v/ with /b/, such as in *Sank you bery much* (Thank you very much). Such replacements may indicate that these English sounds are challenging to articulate for some

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**How to cite this article:** Iino, A., & Wistner, B. (2022). Using an online high-variability phonetic training program to develop L2 learners' perception of English fricatives. In B. Arnþjórsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 174-179). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1454>

EFL learners. One question that arises from this observation is whether learners distinctively perceive the fricative sounds or misidentify them at the perceptual level. If misidentification is involved to a certain degree, learners' perception of English fricatives and the sounds used to replace them may be the cause of confusion in production.

L2 learners are expected to be able to perceive not only standard English sounds but also variations in the same phonemes. This ability is of increasing importance as English is used as a lingua franca throughout the world. High-Variability Phonetic Training (HVPT) enables L2 learners to practice perceiving L2 sounds produced by a variety of talkers in various phonetic environments (Thomson, 2012) and has been shown to improve L2 lexical processing (Melnik & Peperkamp, 2021). HVPT can be provided in an intensive computer-assisted environment so that learners can check their perception of the sounds in a self-directed manner inside and outside the classroom. The purpose of the present study was to examine the effects of computer based HVPT on L2 learners' perception of English fricatives. The research questions were as follows.

- To what extent do Japanese learners of English accurately perceive English fricatives?
- To what extent are the target English fricatives misidentified as other English fricatives?

## 2. Method

Participants were five university sophomores whose L1 was Japanese. They were enrolled in a mandatory English course in the Faculty of Economics in a university in Tokyo. They used *English Accent Coach* (EAC; Thomson, 2017), which is an online program that provides an HVPT environment to practice perceiving the following English fricatives: [f], [v], [θ], [ð], [ʃ], and [z]. In addition to those, a bilabial [b] was also added as a target sound because Japanese speakers tend to replace [v] with [b].

The participants were assigned to use EAC once a week in class for perception training for eight weeks in a time-series design. Within EAC, the learners were directed to set the linguistic environment to 'initial consonant + all vowels', which means non-word single syllables were used as stimuli. They then began the forced-choice identification task with 100 stimuli in the high-variability condition

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where stimulus sounds are provided randomly from differently accented talkers. The participants were assigned to complete a special worksheet created by the researchers in which they recorded misidentified sounds every time they failed to correctly perceive the stimuli.

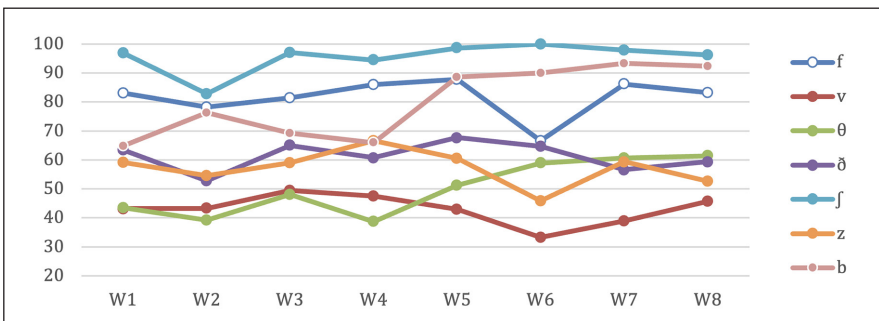
### 3. Results and discussion

The mean accuracy rates at the end of the eight weeks for each target sound indicated that the lowest ones were 43.0% for [v], followed by 50.2% for [θ], 57.2% for [z], and 61.3% for [ð] (Table 1). The sound of [b] (80.1%), [f] (81.6%), and [ʃ] (95.5%) showed relatively higher overall success rates. Regarding changes over time, [b] began at 64.9% in Week 1 and improved gradually to 92.4% in Week 8 (Figure 1). Progress was also observed for [θ], from 43.5% in Week 1 to 61.4% in Week 8. More HVPT opportunities or other consciousness-raising instructional tasks might be required for the sounds on which progress was not observed, while some might have exhibited a ceiling effect.

Table 1. Progress in perception of target sounds over eight weeks (%)

	W1	W2	W3	W4	W5	W6	W7	W8	M
f	83.1	78.2	81.5	86.0	87.8	66.7	86.1	83.2	81.6
v	43.2	43.3	49.5	47.5	42.9	33.3	38.9	45.7	43.0
θ	43.5	39.2	48.1	38.7	51.2	58.9	60.7	61.4	50.2
ð	63.5	52.8	65.0	60.8	67.7	64.7	56.6	59.4	61.3
ʃ	96.9	82.8	97.1	94.5	98.6	100	97.9	96.3	95.5
z	59.1	54.6	59.0	66.6	60.5	45.9	59.4	52.6	57.2
b	64.9	76.3	69.2	66.0	88.6	90.0	93.3	92.4	80.1
M	64.9	61.0	67.1	65.7	71.0	65.6	70.4	64.9	67.0

Figure 1. Changes in perception over eight weeks (%)



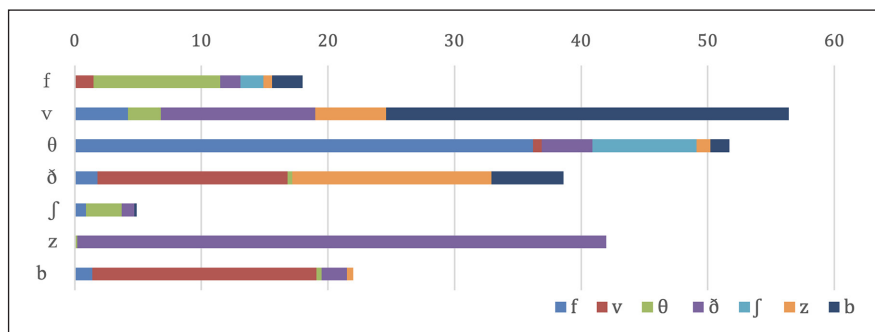
Regarding the misidentification rates (Table 2, Figure 2), the most misidentified sound was [v] (56.3%), which was mistaken mainly as [b] (31.8%). This relationship was also reflected in the results for [b] (22%) to [v] (17.7%). The sound [v] was also mistaken as [ð] (12.2%), which was mentioned in Fujinuma and Wilson (2010).

The sound [θ] (51.6%) was mostly confused with [f] (36.2%) and sometimes with [ʃ] (8.2%). The sound [ð] (38.5%) was most confused with [z] (15.7%) or [v] (15%). This relationship was also observed for [z] (42%) and [ð] (35.4%), which was the most confusing sound. Finally, the sound [f] (17.9%) was mistaken most for [θ] (10%), which was consistent with Lambacher et al. (2001).

Table 2. Error and misidentification rates for each sound over eight weeks

Target sounds	No. of items (M)	Error rate (%)	Misidentification rate (%)						
			f	v	θ	ð	ʃ	z	b
f	13.1	17.9	0	1.5	10	1.6	1.8	0.7	2.4
v	13.2	56.3	4.2	0	2.6	12.2	0	5.6	31.8
θ	11.5	51.6	36.2	0.7	0	4	8.2	1.1	1.5
ð	14.5	38.5	1.8	15	0.4	0	0	15.7	5.7
ʃ	13.8	4.9	0.9	0	2.8	1	0	0	0.2
z	16.1	42.0	0	0	0.2	41.8	0	0	0
b	17.7	22.0	1.4	17.7	0.4	2	0	0	0

Figure 2. Details of misidentified sounds



These results indicate that the reciprocal relationship between [f] and [θ] might have contributed to the improvement in perception of the dental fricative [θ]: the most misidentified sound for [f] (17.9%) was [θ] (10%), and the sound [θ] was most misidentified as [f] (36.2%) (Table 2). A paired relationship was observed for [v] and [ð], which means while the target sound [ð] was mistaken for [v] (15%),

the target [v] tended to be perceived as [ð] (12.2%). Even though progress over time was not observed, reciprocity was also found. The case between [b] and [v] was also similar. The target sound [v] was often misidentified as [b] (31.8%) and [b] was mistaken as [v] (17.7%). Although the recognition of [v] was the lowest for the entire period, the perception rate of [b] improved the most. Additionally, [ð] tended to be perceived as [z] (15.7%), and the target [z] tended to be misidentified as [ð] (41.8%). From these data, the high functional load pairs elicited from HVPT might be the key features for developing learners' consciousness of the acoustic differences during instruction, which could also facilitate production of the sounds.

#### 4. Conclusion

The results of the current study indicated that weekly practice using HVPT could facilitate L2 learners' perception of some English fricatives, and the misidentification rates helped to identify confusing pairs or sets of English fricatives: [θ] and [f], [v] and [b], and [ð] and [z] / [v]. Considering the limited time available for the in class training, further progress might have been observed if the learners had used EAC outside of class. Further research could examine such a combination as well as having learners repeatedly record and reflect on their perception and production accuracy as they utilize HVPT.

#### 5. Acknowledgments

This work was supported by JSPS KAKEN Grant No. 20K00785 (Principal Investigator: Atsushi Iino; Co-Investigator: Brian Wistner).

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# Strategies to build a community of learners in online classes

Bradley Irwin<sup>1</sup>

**Abstract.** This paper describes the use of screencast feedback to enhance teaching presence and weekly self-reflection surveys to enhance social presence among students and build a community of learners. These approaches were found to diminish the feeling of isolation in online learning environments. Further findings indicated that this multimodal approach to providing feedback helped build a rapport between the teacher and students which led to increased motivation and task engagement. These strategies to build a community of learners will be of particular interest to educators looking for innovative approaches to improving teaching and social presence in online learning environments while also providing personalized, formative feedback.

**Keywords:** multimodal feedback, screencasts, online learning, teaching, social presence.

## 1. Introduction

At the outset of the coronavirus pandemic, Japanese universities experienced an unprecedented shift to online learning. Although Japan is often thought of as a leader in innovative technology, most classes at the tertiary level are still very much analog. To make matters worse, the decision to ‘pivot’ to online learning was made only weeks before the beginning of the school year at many institutions in April 2020. While studies by [Kumar, Martin, Budhrani, and Ritzhaupt \(2019\)](#) and [Hodges et al. \(2020\)](#) found that effective online university-level courses took between six to nine months of thoughtful planning, teachers in Japan had a relatively

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**How to cite this article:** Irwin, B. (2022). Strategies to build a community of learners in online classes. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 180-184). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1455>

short amount of time to design their courses. Furthermore, a lack of educational technology support led many analysts to predict that the Japanese education system would have a particularly difficult time to adapt to online learning environments (Kittaka, 2020).

To better understand the results of this shift to online learning, the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) conducted a survey of 3,000 randomly selected students in early 2021. While the survey found that almost 60% of respondents were satisfied or somewhat satisfied with their online classes, it also found that 53% felt a feeling of loneliness and isolation from their peers (MEXT, 2021).

Furthermore, a study conducted by Irwin (2021) of 103 first- and second-year university students found that 65% of respondents felt isolated and socially distant from both their classmates and teachers. Students were missing what Lawrence (2017) described as ‘the human feel’ in their online classes caused by a lack of social and teaching presence. Lawrence identified social and teaching presence as essential for successful online learning, and that, “teaching presence is the catalyst that fosters social and cognitive presence” (Lawrence, 2017, p. 142).

Therefore, the author of the present study developed two strategies to address the perceived lack of interpersonal interaction students reported experiencing in their online classes. The two instructional strategies described in this paper were developed to promote teaching presence by providing personalized screencast feedback and social presence through weekly self-reflection surveys. The goal of each was to help students establish a rapport with their teachers and classmates while also fostering a sense of community in their online lessons.

## 2. Instructional learning context

Two hundred and fifty first- and second-year undergraduate English as a foreign language learners (A2-B1 CEFR level) enrolled in ten online classes (divided by year and language ability) participated in the lessons described in this paper. The lessons were conducted online in English and held once a week for 90 minutes during a 15-week semester. The lessons combined real-time instruction using a video conferencing platform with on-demand materials in the form of video tutorials, narrated slideshow presentations, and study materials uploaded to a Learning Management System (LMS). The lessons and study were conducted during the 2021 spring term (April-July).

### 3. Personalized screencast feedback

To improve teaching presence in the online lessons, the instructor utilized screencasts to provide personalized feedback on a variety of assignments. The screencasts were in the form of digital video recordings with audio narration that captured feedback on digitally submitted assignments displayed on a computer screen.

Each screencast feedback video followed the format of feedback conferences outlined by Ferris and Hedgecock (2005). The screencasts started with a salutation and affirmation, highlighted the strengths of the assignment, discussed its weaknesses, provided suggestions for improvement, and finished with closing remarks of encouragement. Following this format, the screencast feedback was highly personalized and provided an emotive element conveyed through the tone and inflection of the instructor's voice.

The length of feedback videos and the time it takes to produce them varies depending on the type of assignment and feedback focus. As an example, for a paragraph writing assignment of 150 words, the videos averaged four minutes in length and took approximately 15 minutes to produce. The production time required depends on the screencaster experience, workflow efficacy, and teaching context.

In terms of improved teaching presence, Irwin (2022) describes an experiment in which students were separated into a group that received written feedback (control) and a group that received screencast feedback (experimental). Among several significant findings, students in the experimental group reported that the feedback style resulted in enhanced feelings of encouragement and a closer connection with the instructor. Thus, screencast feedback helped develop a rapport with the instructor that did not evolve from traditional written feedback.

### 4. Weekly self-reflection surveys

To address social interaction, weekly self-reflection surveys were utilized. The surveys were conducted using an online form and were to be submitted by the end of each week.

While the content of the surveys changed slightly each week depending on the lesson materials, each survey followed a similar pattern. Students were asked to report how they felt during the week, the amount of time they had spent engaging

with the lesson material, what they had learned, what they had trouble with, and if they had any comments or suggestions for the instructor to help improve the lessons.

The survey results were then anonymized and compiled into a spreadsheet that was uploaded to the LMS and shared with the class. To acknowledge student contributions, the instructor highlighted responses in each question category that were deemed to be insightful or thought-provoking. Finally, the instructor created a short screencast of the survey results to encourage the students and respond to any difficulties they were having. This form of contextual socialization allowed students to compare their efforts, learning outcomes, and difficulties with their classmates. By acknowledging the student contributions in this way, a virtuous cycle of feedback and response was created. This was demonstrated by the fact that the thoughtfulness of the responses each week deepened and developed from the outset of the activity until the end of the term.

## 5. Conclusions

By combining the assignment screencast feedback and weekly self-reflection surveys, the instructor was able to enhance both teaching and social presence in the online lessons described in this paper. As a result, students reported extremely high satisfaction levels in anonymous course evaluation surveys conducted by the university at the end of the semester. Further results showed that students appreciated the instructor for utilizing the two strategies because they felt that they had developed a genuine rapport with both the teacher and their classmates.

The challenge of planning and implementing online language lessons that provide appropriate teaching and social presence should not be underestimated. However, without sufficient attention given to interpersonal interaction, instructors risk increasing attrition rates in their online classes (Tyler-Smith, 2006). The two strategies described in this paper can go a long way to creating an online learning environment rich in both teaching and social presence while at the same time providing highly personalized and motivating feedback.

It is difficult to predict what lasting impacts the coronavirus pandemic will have on education in general and online learning specifically. However, screencast feedback and weekly self-reflection surveys are not activities that should be limited to online learning environments. They can be used to create unique opportunities to develop and strengthen rapport within hybrid style or in-person lessons as well.

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# Systematic teaching of English affixes through the online material Affix Master 10

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Kazuhiko Katagiri<sup>3</sup>, and Mitsuru Orita<sup>4</sup>

**Abstract.** This study examines whether ten weeks of direct instruction of affixes with online systems can improve learners' knowledge of affixes by using Affix Master 10 (AM10), a collection of online self-study materials developed by the current researchers. The aim of AM10 is to let students comprehensively learn 30 prefixes and 31 suffixes. The two research questions are (1) whether systematic instruction of affixes using the online program improves learners' knowledge of affixes (prefixes and suffixes), and (2) whether systematic instruction of affixes using the online program improves learners' knowledge of affixes without direct instruction as well as those with direct instruction. The results found that after learning with AM10, the affix knowledge statistically significantly increased. Furthermore, it seemed to contribute to the learning of the affix system itself, which was evidenced by the gain in knowledge of untaught affixes.

**Keywords:** affix, direct instruction, online program.

## 1. Introduction

Expanding word knowledge through affixation is a familiar L2 learning strategy. Nagy and Anderson (1984) stated that “if the frequent words in a word family are already known, this procedure provides a bridge from familiar words to new

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**How to cite this article:** Iso, T., Aizawa, K., Katagiri, K., & Orita, M. (2022). Systematic teaching of English affixes through the online material Affix Master 10. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 185-190). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1456>

words” (p. 326). The concept of word families (i.e. a word stem and its collection of affixes) allows learners to infer the meaning of other members of the same word family if they know the affixed word (Bauer & Nation, 1993).

However, there has been insufficient research on the knowledge of affixes among Japanese learners of English. Most studies on this topic have focused on the relationships between lexical knowledge and affixes, and between productive and receptive knowledge of affixes (Aizawa, Iso, & Nadasdy, 2019; Mochizuki & Aizawa, 2000; Schmitt & Meara, 1997). These studies show that the relationship between lexical knowledge and affix knowledge as well as between productive and receptive affixation knowledge is highly correlated. However, it has not been tested whether increase in affixation knowledge is caused by increased lexical knowledge or by increased knowledge of affixation itself.

Schmitt and Meara (1997) found that without educational intervention, the learning of English affixes is limited, but there has been little systematic teaching of affixes in Japan. This is partly because the type and number of affixes presented to learners vary in different textbooks (Morita, Uchida, & Takahashi, 2019). Therefore, the aim of this study is to investigate the effect of systematic teaching of affixes using a collection of original materials, AM10, as well as its extended effect, if any, on untaught affixes.

Our research questions are as follows.

- Does systematic instruction of affixes using AM10 improve learners’ knowledge of affixes between pre- and post-test?
- Does AM10 improve learners’ knowledge of affixes without direct instruction as well as those with direct instruction?

## 2. Method

The affixes targeted for study were selected according to two criteria: (1) The stem of the word must be within the 4,000-frequency band in the *JACET8000* vocabulary list, and (2) affixes must have three or more different stems to be added to form new words. Finally, 30 prefixes and 31 suffixes were selected as in Table 1. The procedure of the on-demand self-study program was made up of four steps as shown in Table 2 and Figure 1.

Table 1. Target affixes introduced in AM10

Week 1	Prefix	un-, in-, dis-, non-	Negative
Week 2		anti-, contra-, counter-, with-	Against
Week 3		inter-, pre-, post-, re-	Before, forward, in, after, backward
Week 4		super-, sur-, extra-, ultra-, sub-, in-, en-, em-	Over, beyond, down, under, in, within
Week 5		com-, co-, cor-, syn-, sym-, semi-, uni-, mono-, homo-, bi-	With, number
Week 7	Suffix	-an, -eer, -ee, -er, -ist	Person
Week 8		-al, -ance, -ency, -ion, -ment, -ism, -dom, -ness, -ship, -th	Abstract noun
Week 9		-ful, -ous, -y, -ish, -ern, -able, -ible, -less, -ate, -al, -ive	Adjective
Week 10		-ize, -ify, -ate, -ly, -wards	Verb, adverb
Week 11	Wrap-up	Review	

Figure 1. Components of AM10

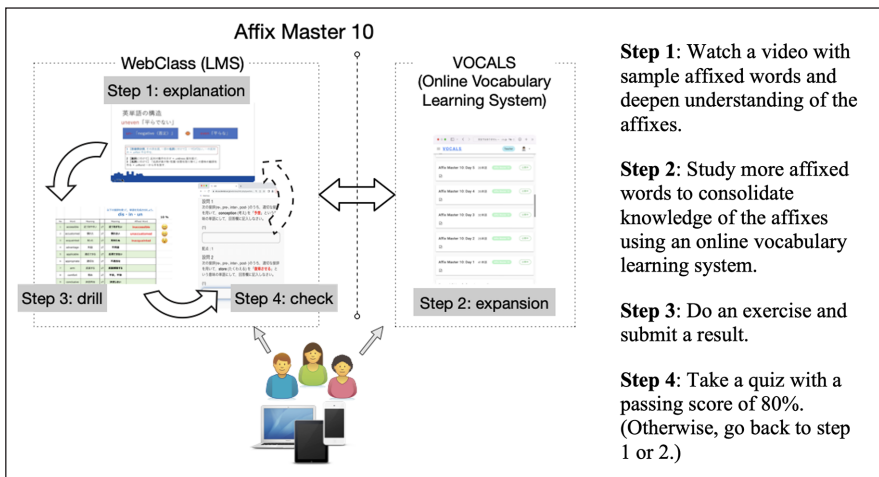


Table 2. Four stages of weekly sessions

	Activities	Interface	Devices	Duration
Step 1	Watching video	WebClass	PC, Tablet, or Smartphone	7-12 mins
Step 2	Additional examples	VOCALS	Smartphone	10-30 mins
Step 3	Exercises	WebClass	PC	15-30 mins
Step 4	Taking a quiz	WebClass	PC, Tablet, or Smartphone	15-30 mins



To measure the learning outcome, an online affix test (based on [Aizawa et al., 2019](#)) was used. The task was to choose one out of eight affixes commonly attachable to the three stems. For example, when ‘clear’, ‘complete’, and ‘quiet’ are given as a cue, participants were to choose ‘-ly’ among ‘-al’, ‘-ment’, ‘-ist’, ‘-ous’, ‘-ful’, ‘-ize’, ‘-ly’, and ‘-ation’. The total number of questions was 60 (15 prefixes and 15 suffixes, two different sets of stems for each).

Participants in this study were 512 Japanese university students majoring in engineering. Their proficiency levels are estimated as CEFR A2 to B1 level. They had at least six years of formal English education.

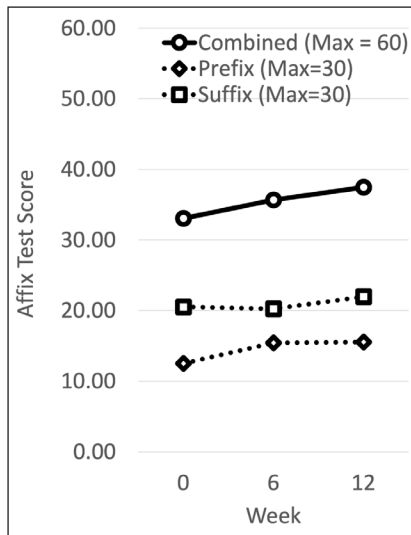
### 3. Results and discussion

Table 3 and Figure 2 show the results of the affix test at the pre- and post-tests.

Table 3. Mean raw scores with standard deviations across time

	N	Week 0	Week 6	Week 12
		Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Combined	512	33.05 (10.72)	35.67 (12.09)	37.48 (12.28)
Prefix		12.52 (5.49)	15.42 (6.22)	15.54 (6.43)
Suffix		20.53 (6.12)	20.25 (6.72)	21.95 (6.62)

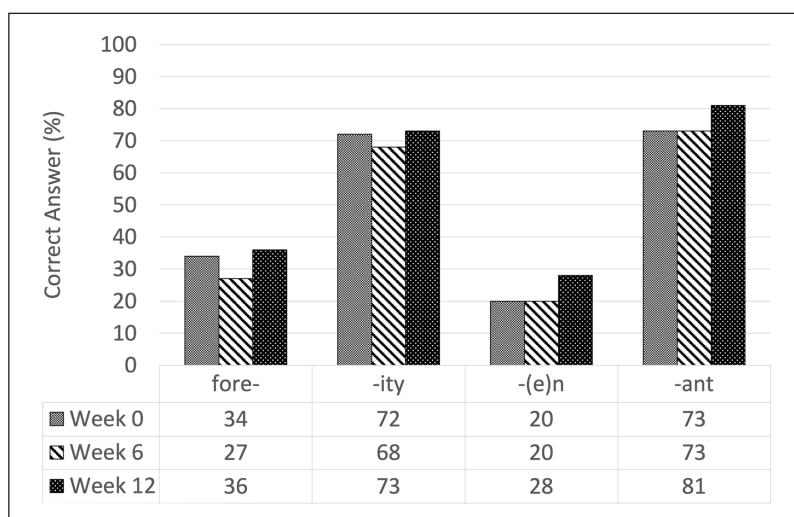
Figure 2. Mean scores across time



The scores of the prefixes increased at Week 6, as did the scores of the suffixes at Week 12, which corresponds to the period when the respective types of affixes were learned. These gains were revealed as significant with ANOVA and a post-hoc comparison ( $F(2,1022)=77.55, p<.001, \text{partial } \eta^2=0.132; t=-11.45, p<.001, d=-0.506$  for prefix, and  $F(2,1022)=33.95, p<.001, \text{partial } \eta^2=0.62; t=-6.41, p<.001, d=-0.283$  for suffix). Further, there was no significant difference in the mean scores during Weeks 6 to 12 in prefix. This indicates that the affix knowledge gained through AM10 was retained after six weeks. Taken together, these results demonstrate the effectiveness of AM10. The results extend the findings of [Schmitt and Meara \(1997\)](#).

Concerning the effects on affixes that were not taught in AM10, [Figure 3](#) shows the changes in the amount of knowledge over time for the four affixes: ‘fore-’, ‘-ity’, ‘-(e)n’, and ‘-ant’. Here, the perfect score for each affix indicates that all the participants’ answers were correct on two occasions.

Figure 3. Changes in the amount of knowledge of the untaught affixes



When comparing Weeks 0 and 12, the amount of affix knowledge increased over time for ‘-(e)n’ and ‘-ant’. The results suggest that AM10 invoked system learning of affixes as opposed to item learning. That is, AM10 contributed to learning of the affix system itself, not only the individual affix taught. However, these results should be interpreted cautiously, as the participants could have chosen the untaught affixes simply because they could tell that the other choices, all of which were the learned affixes, were not good matches.

Regarding ‘fore-’ and ‘-ity’, the overall increase was limited. Interestingly, there was a decrease in knowledge of these affixes at Week 6, which suggests negative interference caused by AM10. The current study lacks evidence regarding the cause due to the limited number of untaught affixes. At this point, the effect of AM10 on untaught affixes remains mixed. Future studies should include other prefixes and suffixes that AM10 does not include.

## 4. Conclusions

This study investigated the effectiveness of AM10, a collection of materials which teach English affixes systematically. After ten weeks of self-study, the learners showed an increase in their affix knowledge. Further, the use of AM10 possibly contributed to the system learning of affixes. More studies are needed to generalize the findings of this study. However, AM10 showed potential as a teaching/learning system of affixes.

## 5. Acknowledgments

This research project is supported by Grants-in-Aid for Scientific Research (20K00784).

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# Learning episodes in an intercultural virtual exchange: the case of social high-immersion virtual reality

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**Abstract.** Computer-mediated communication tools facilitate international collaboration projects between foreign language learners and peers abroad (O'Dowd, 2018). Social Virtual Reality (VR) applications allow for synchronous interactions and task-based communication in which learners can experience telepresence and immersion and converse in a foreign language. Based on previous pilot experiences (Jauregi-Ondarra, Gruber, & Canto, 2020, 2021), this Virtual Exchange (VE) project aims to investigate how the specific affordances of Social High-immersion VR (SHiVR) in conjunction with designed tasks influence interaction patterns, and learning episodes. The VE took place between two groups of university students in the Netherlands (N=15) and Cyprus (N=14) through SHiVR in March 2022. The main aims of the tasks were to raise student intercultural awareness, stimulate task-based communication processes using English as a lingua franca and digital pedagogical competences of language education students. Different sources of data were gathered and analysed. In this paper, we describe and present the pedagogical experience and the initial results.

**Keywords:** social high-immersion virtual reality, virtual exchange, language related episodes, culture related episodes.

## 1. Introduction

In this study we present the pedagogical experience of university Dutch and Cypriot students from a VE project conducted in the immersive environment, AltspaceVR, a social application that offers collaboration and communication

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**How to cite this article:** Jauregi-Ondarra, K., Christoforou, M., & Boglou, D. (2022). Learning episodes in an intercultural virtual exchange: the case of social high-immersion virtual reality. In B. Ambjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 191-196). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1457>

opportunities to participants who are embodied as customised avatars. In contrast to other media, VR affordances enable users to have a multisensory experience and simulate situated learning opportunities (Christoforou, Xerou, & Papadima-Sophocleous, 2019) that could transform VE projects. Through the use of VR-mediated tasks, we tried to explore how the whole experience influences interactions and learning episodes using English as a lingua franca.

## 2. Method

The project was embedded in the students' courses, Language Education and ICT (Dutch students), and English for Chemical Engineering (Cypriot students). Prior to the collaboration, the Dutch students watched video tutorials and participated in preparatory immersive sessions on how to operate the Oculus headsets in VR, while the Cypriot ones familiarised themselves with the Oculus Quest 2 headsets in a Cyprus University of Technology (CUT) lab. They performed three tasks in dyads (getting to know each other, student life, and a task designed by the Dutch students). They carried out their sessions at times of their own convenience in AltspaceVR.

Several sources of data have been gathered in order to investigate which learning opportunities emerge during the sessions: pre- and post-surveys (including a five point Likert scale and open questions); reflection diaries, which the students filled in after each task to describe their intercultural experience with the VR app, as well as the communication and collaboration with the partner; and interaction recordings and focus group interviews with the instructor conducted at the end of the project.

## 3. Results and discussion

Because of space constraints, in this section we present first the results of students' general immersive experience based on the final surveys. We then move to analyse the interaction affordances of the VR app and show examples of the interaction patterns of one dyad (NL1-Cy1)<sup>4</sup> performing Task 2 (student life).

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4. NL: Dutch student; Cy: Cypriot student

### 3.1. Students' general experience

Eleven Dutch and ten Cypriot students filled out the final questionnaire. Students found it easy to start and use the VR tool and sound, crucial in communication processes, was good (Table 1). Although in general, participants were positive about the whole VR exchange experience, we notice a clear discrepancy between the Dutch and Cypriot students, the latter ones being much more enthusiastic than the Dutch. Interestingly, all students valued the international dimension highly.

Table 1. Main VR exchange results based on the final survey

Item	NL		Cy	
	M	SD	M	SD
It was easy to START the tool.	3.5	0.9	4.3	0.8
It was easy to USE the tool.	3.9	0.9	4.4	0.7
SOUND was good.	4.2	1.0	3.6	0.8
I found the VR environment difficult to use.	1.8	0.9	1.9	0.7
I like to communicate in this VR environment.	3.3	0.9	4.6	5.5
I like to meet students from other countries in this VR environment.	3.9	1.1	4.5	0.5
I enjoyed the VR sessions.	3.7	0.8	4.5	0.5
This VR environment is nice.	3.6	0.7	4.7	0.5
I think VR is an effective system for practising a foreign language.	3.4	1.1	4.4	0.5
I liked the tasks I carried out with my partner.	3.9	0.8	4.6	0.7
The international dimension (the interaction with students from another country) made the VR sessions more interesting.	4.5	0.8	4.5	0.5
The VR sessions helped me discover new things about other people's views, another culture.	4.0	1.0	4.4	0.7

Note. N(NL)=11; N(Cy)=10. Responses in five point Likert scale (1. Strongly disagree – 5. Strongly agree). M: mean values. SD: Standard Deviation.

### 3.2. Learning affordances of VR

During the AltspaceVR interactions (Figure 1), the most prevalent affordance was the virtual communication ability, depicted through the participants' chosen avatars and their abilities to gesture during their conversation and point to various directions or other virtual elements in the virtual environment. A second affordance was the full immersion of the participants during their interaction in their virtual world as both saw their avatars as an extension of their bodies from the real into the virtual world. All these affordances were displayed during

the participants' verbal interaction and collaboration to teach each other how to interact with VR elements and objects found in the AltSpaceVR world, in this case how to shoot a basketball and how to light and shoot fireworks.

Figure 1. Students interacting in AltSpaceVR



### 3.3. Interaction and learning episodes

Interaction data was analysed to find out how students engaged in social interaction in the VR space and which learning opportunities emerged in the sessions. For this task students had to preview a 360° video over the university and/or the city of the speech partner.

- Culture related learning episodes

The interaction is seeded with varied and rich culture related episodes (Zakir, Funo, & Telles, 2016). NL1 initiated the video discussion asking Cy1 about his global impression about Utrecht. Cy1 referred to Utrecht as an ‘amazing city’, with ‘the river’ and where ‘everybody is cycling’. They then moved to compare both cities and universities in terms of differences and similarities: they referred to the density, the size, and colours of the city and the buildings, the city planning, and the drivers’ behaviours. NL1 related the general impression to his personal experience when visiting the southern European countries. Later in the interaction Cy1 expressed his wish to visit Utrecht and the Netherlands and NL1, Cyprus. Both suggested activities they could undertake during their visit. They

then moved to discuss the studies and students' lives. In the following excerpt, we can see how they exchange information about living alone, living with the family at home, or in a student house during their study. It is interesting to see how they personalise the experience, trying to create bridges, and reach common ground.

**Excerpt 1: Culture-related episodes**

NL1: Maybe, would you ever like to go in a real student house with a lot of other students or would it be too busy?

Cy1: ahhh (.) I don't know, I don't think I would like to go to a student house, like I am I am pretty introvert as a person, so I like to have my quiet

NL1: yep, I really get it too (.). I live still at home with my parents and I think it is just fine for me. I don't want to go to a student house. A friend of mine asked me to join his house, but there are 16 students in one house, so I don't think it would be very good for me=

CY1: =oohh, yea. That sounds horrible honestly. I wouldn't like to go=

NL1: =no, me neither.

- Language related episodes

The students' utterances in English in the language episodes were mostly lexis and mechanics-oriented. In Task 2, the students talk about languages.

**Excerpt 2: Language-related episodes**

NL1: ...but with English I'm more comfortable so I'm glad we're doing this in English.

Cy1: Yeah, it's definitely a lot better doing that in English.

NL1: We can also try it in Greek, I know a few words in Greek...

Cy1: (chuckles)

NL1: Not too many to have a real conversation, but I can say *kalimera* (καλημέρα = *good morning* in Greek), that's something, right?

Cy1: Yeah, it is something.

It is interesting to see how the Dutch student's metatalk included a Greek word which serves as an instance of bridging language and culture. Within the context of organising a party and the snacks they usually eat, Cy1 says:

**Excerpt 3: Language-related episodes**

Cy1 : Another is *lountza* ham.

NL1 : Ok, what is that?

Cy1 : Lou-ntza. It's hard to pronounce.

NL1 : Lou-ntza?

Cy1 : Yeah, you got that right!

This is a mechanics-oriented short exchange, depicted through the students' wish to pronounce the local word right, followed by a rewarding reassurance from Cy1 at the end.

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## 4. Conclusions

In general, students enjoyed the intercultural learning experience, although Cypriot students were more positive about the immersive experience than their Dutch peers. The analysed interaction shows that a task seeded with cultural elements enhances rich intercultural negotiations in the immersive environment. Interestingly, instead of providing just global information on cultural issues and falling into stereotypes, students, embodied as avatars, succeed in personalising their cultural experience, voice their cultural identity, learn from one another, and reach common ground. These are preliminary results that will need to be substantiated with additional data analysis.

## 5. Acknowledgements

We would like to thank all the students for their contribution to this study.

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# Evaluating automatic speech recognition for L2 pronunciation feedback: a focus on Google Translate

Paul John<sup>1</sup>, Walcir Cardoso<sup>2</sup>, and Carol Johnson<sup>3</sup>

**Abstract.** This study examines the L2 pronunciation feedback provided by the Automatic Speech Recognition (ASR) functionality in Google Translate (GT). We focus on three Quebec Francophone (QF) errors in English: th-substitution, h-deletion, and h-epenthesis. Four hundred and eighty male and female QF recordings of sentences with correctly and incorrectly pronounced final items (e.g. *I don't know who to thank* versus *tank*) were played into GT. Errors were equally divided between mispronunciations leading to real word (*thank* → *tank*) and nonword output (*thief* → *tief*). As anticipated, we found greater transcription accuracy for correct pronunciations and, among incorrect pronunciations, for real words versus nonwords. Overall, our findings suggest ASR can be highly effective for pronunciation feedback. We also examined transcriptions for gender bias, since ASR systems are often trained on corpora with more male voices, but our concerns proved unfounded: surprisingly, higher transcription accuracy was found for female recordings.

**Keywords:** automatic speech recognition, Google Translate, L2 pronunciation, corrective feedback, gender bias.

## 1. Introduction

ASR technology constitutes a promising means for second language (L2) learners to access feedback on pronunciation errors. For example, QFs typically struggle with English /θ/ and /h/, tending to substitute /t/ for /θ/ (*thank* → *tank*), and to delete or epenthesize /h/ (*heat* → *\_eat* / *air* → *hair* respectively) (Brannen, 2011; John & Cardoso, 2009). If QFs use ASR to transcribe their output for targets

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**How to cite this article:** John, P., Cardoso, W., & Johnson, C. (2022). Evaluating automatic speech recognition for L2 pronunciation feedback: a focus on Google Translate. In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 197-202). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1458>

such as *thank*, *heat*, and *air* (e.g. in a reading-aloud task), they may find that the transcription reflects the incorrect pronunciations *tank*, *eat*, and *hair*. The transcription thus provides the invaluable feedback that learners have produced instances of th-substitution, h-deletion, and h-epenthesis, and learners can revise their pronunciation until the transcription matches the target.

Corrective feedback is an effective means of promoting L2 pronunciation accuracy (Lyster, Saito, & Sato, 2013). Immediate feedback is, however, hard to provide, and delayed feedback (e.g. on recordings) is time-consuming for teachers to formulate, so learners may not receive much feedback. This is where ASR can fill the gap, generating feedback that learners access ‘anytime-anywhere’ to engage in autonomous learning (van Lieshout & Cardoso, 2022). Nonetheless, questions remain regarding the adequacy of ASR-generated feedback, as in the widely available tool GT. To what extent do GT transcriptions capture correct and incorrect pronunciation?

Our study investigates transcription accuracy for items appearing in sentence contexts rather than in isolation (e.g. in wordlists). In this case, GT can identify the target item using not only phonetic but also contextual (syntactic/collocational/semantic) cues (Ashwell & Elam, 2017). Under these conditions, we expected higher transcription accuracy for correctly than incorrectly pronounced target items. Given correct pronunciation (*I don't know who to thank*), phonetic and contextual cues converge on the target item. Given incorrect pronunciation (*I don't know who to tank*), phonetic and contextual cues conflict, and GT may transcribe contextually motivated *thank* rather than phonetically accurate *tank*, thereby failing to flag the pronunciation error. The adequacy of ASR-based feedback depends on transcriptions both confirming correct and flagging incorrect pronunciations.

With incorrect pronunciations, we also anticipated greater accuracy for real words (*thank* → *tank*; *heat* → *\_eat*; *air* → *hair*) versus nonword output (*thief* → *tief*; *head* → *\_ead*; *ice* → *hice*). Nonwords being absent from the GT lexicon, the technology should fail to flag such errors, often supplying the contextually appropriate item. Finally, we investigated ASR for gender bias: since ASR is often trained on corpora with more male voices (Tatman, 2017), we anticipated a male transcription advantage.

The following summarizes our predictions regarding transcription accuracy (with ‘>’ indicating ‘greater than’): *correct* > *incorrect pronunciations*; *real word* > *nonword output*; *male* > *female speech*.

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## 2. Method

One hundred and twenty sentences were recorded by four male (M) and four female (F) QF adults with correct and incorrect pronunciation of final items starting with /θ/, /h/, or a vowel. Among incorrect pronunciations, 60 led to real word and 60 to nonword output. Four hundred and eighty recordings (four versions of each sentence: 1M/1F recording with correct/incorrect pronunciation) were played into GT and coded for final-item transcription accuracy.

Among inaccurate transcriptions for correctly/incorrectly pronounced items, we also determined rates of ‘false alarms’ and ‘false negatives’. A false alarm involves, for example, correctly realized *thank* being transcribed as *tank*, misleadingly suggesting the learner has substituted /t/ for /θ/. A false negative involves *thank* being transcribed as *thank*, despite being incorrectly realized as *tank*, misleadingly indicating target-like pronunciation.

## 3. Results and discussion

**Table 1** presents accuracy rates for transcriptions of correctly pronounced sentence-final items. The overall accuracy rate (88.33%) for correct pronunciations is reassuring: in most cases, GT confirmed the target-like pronunciation.

Furthermore, among inaccurate transcriptions (11.66%), we can report that fully half (5.83%) constitute ‘near-accurate’ transcriptions. That is, the mistranscription nonetheless started with the problematic target sound (e.g. output *thrifty* was transcribed as *thirsty*), from which learners can correctly conclude that they successfully realized the target sound (/θ/ in this example). In addition, no false alarms occurred among the mistranscriptions: correctly pronounced *thank-heat-air* were never transcribed as *tank-eat-hair*. Again, the absence of such misleading feedback is encouraging.

Table 1. Transcription accuracy: correct pronunciations (%)

Target items	M	F	M + F
th-initial	72.50	85.00	78.75
h-initial	90.00	97.50	93.75
V-initial	87.50	97.50	92.50
<b>Mean</b>	<b>83.33</b>	<b>93.33</b>	<b>88.33</b>

Table 2 presents accuracy rates for transcriptions of incorrectly pronounced sentence-final items leading to real word (a) and nonword output (b).

Table 2. Transcription accuracy: incorrect pronunciations (%)

a. Real word output (thank → tank)			
Target items	M	F	M + F
th-initial	30.00	40.00	35.00
h-initial	35.00	65.00	50.00
V-initial	30.00	85.00	57.50
<b>Mean</b>	<b>31.66</b>	<b>63.33</b>	<b>47.50</b>
b. Nonword output (thief → tief)			
Target items	M	F	M + F
th-initial	0.00	0.00	0.00
h-initial	5.00	15.00	10.00
V-initial	10.00	20.00	15.00
<b>Mean</b>	<b>5.00</b>	<b>11.66</b>	<b>8.33</b>

As expected, the overall mean for incorrect pronunciations resulting in real words (47.5%) is considerably lower than for correct pronunciations (88.33%). The mean for nonword output (8.33%) is lower still, so GT is virtually incapable of providing feedback on nonword mispronunciations. Exceptions were mainly due to the technology identifying proper nouns corresponding to phonetic input (e.g. *oil* → *hoil* was transcribed as *Hoyle*, a place name). This is important information for teachers who wish to design ASR-based pronunciation activities: these should target items that, if mispronounced, lead to real word output. Since GT flags almost half the real word errors here, it constitutes an effective tool for providing QF ESL learners with pronunciation feedback. Moreover, some mistranscriptions (14.5% in all) were ‘near-accurate’: for example, output *teft* for *theft* was transcribed as *test*, which captures the mispronunciation.

Nonetheless, GT generated numerous false negatives: 36.66% (real word output) and 65% (nonword output). Consequently, to verify pronunciation ability, learners should test themselves on multiple tokens, practicing until transcriptions are consistently accurate. Alternatively, learners can produce items in isolation, thus eliminating the possibility that GT bases its transcription on contextual cues.

Interestingly, contra the expected pattern for gender bias, transcription accuracy for F recordings is higher than for M recordings across the board, whether for correct (Table 1) or incorrect pronunciations (Table 2). Conceivably, the F recordings contained the more careful pronunciation that typifies female L2 speech (Moyer,

2016). This hypothetically clearer articulation may facilitate automatic recognition of individual items and override any inherent gender bias in the technology.

## 4. Conclusions

Our findings indicate that ASR is a highly promising tool for much-needed L2 pronunciation feedback. GT showed high transcription accuracy for correct pronunciations and no false alarms. Moreover, the consistently higher transcription accuracy for female voices suggests that concerns about ASR gender bias are unfounded. Although ASR struggles with nonword errors (8.33% transcription accuracy), almost half of real word errors in a sentence context were flagged, and we would expect even higher transcription accuracy for items spoken in isolation. Indeed, the next stage of research will target wordlists, such that transcriptions are based on phonetic input alone, without contextual cues. Future research could also go beyond consonants to include L2 vowel and lexical stress errors. In sum, while the technology has certain limitations for teachers to highlight and explain, L2 learners can use ASR to access invaluable feedback on pronunciation.

## 5. Acknowledgments

This project received funding from the *Luc Maurice Foundation* and the *Social Sciences and Humanities Research Council* (Canada).

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# Using Google Voice Typing to automatically assess pronunciation

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Kathleen Brannen<sup>4</sup>, and Suzanne Springer<sup>5</sup>

**Abstract.** This study examined the use of a popular Automatic Speech Recognition (ASR), Google Voice Typing (GVT), to automatically assess English as second language pronunciation. It aimed to answer the following question: What is the relationship between GVT-rated scores and human-rated scores? To answer this question, we compared audio recordings of 56 oral placement tests, rated by both human raters and GVT. Our results indicate that GVT scores strongly correlated with human-rater scores, indicating that this non-customizable ASR technology could be leveraged to increase the test usefulness of language placement tests.

**Keywords:** automatic speech recognition, automatic assessment, L2 pronunciation, Google voice typing.

## 1. Introduction

Language programs and schools rely on in-house placement tests to ensure students register in level-appropriate classes. However, these tests require extensive financial and human resources (Isaacs, 2018). This is especially true when assessing pronunciation, which often involves interviewers and multiple raters (Cox & Davis, 2012). However, there are known problems with rater reliability. For example, raters may overestimate the comprehensibility of second

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**How to cite this article:** Johnson, C., Cardoso, W., Zuercher, B., Brannen, K., & Springer, S. (2022). Using Google Voice Typing to automatically assess pronunciation. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 203-207). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1459>



language (L2) speakers when familiar with their accents (Carey, Mannell, & Dunn, 2010). This lack of reliability can lead not only to the incorrect placement of students, but also to skepticism of test results (van der Walt, de Wet, & Niesler, 2008).

Using ASR to assess pronunciation could mitigate these problems. Large testing companies have been using custom-built ASR technology for more than two decades (e.g. Pearson's Versant – Bernstein, Van Moere, & Cheng, 2010). These organizations have access to financial and human resources beyond that of language institutions, but with advances in technology, it is now feasible for smaller organizations to take advantage of ASR to assess pronunciation. Studies of customized ASR-based assessment tools developed for language placement tests have found that ASR scores are strongly correlated with human-rater scores (Cox & Davis, 2012, van der Walt et al., 2008). Nevertheless, customizing ASR still requires a substantial budget and specific knowledge for development and maintenance (Isaacs, 2018). One way of mitigating this might be the use of free non-customizable ASR such as GVT, which has reached a high recognition rate of English L2 speech for high proficiency learners (McCrocklin & Edalatihams, 2020) and, consequently, has the potential to provide language institutions with simple low-cost solutions for pronunciation assessment.

The aim of this study was to determine if the use of GVT to assess pronunciation could increase the test usefulness of a university language placement test, based upon Bachman and Palmer's (1996) test usefulness model. This model consists of six qualities that determine the usefulness of a test: reliability, construct validity, authenticity, interactiveness, impact, and practicality. The relative importance of these qualities depends on the context of the test. As such, there is no perfect intertwining of the qualities. Instead, test developers must balance these qualities and accept that some may be negatively impacted for the sake of others, based on the purpose of the test. The research question that guided this study was:

- (1) What is the relationship between GVT-rated and human-rated pronunciation scores?
- (1a) Do relationships vary between GVT-rated and human-rated scores across a set of evaluation criteria?
- (1b) Do relationships vary between GVT-rated and human-rated scores across participant proficiency levels?

## 2. Method

Fifty-six undergraduate students of various oral proficiency levels at a university in Canada were recorded during the pronunciation portion of their placement tests for English second language (ESL) courses (Novice=2, Beginner=6, Intermediate=12, Advanced=14, and Fluent=22). Participants read aloud five increasingly difficult sentences (randomly chosen from a bank of sentences), which appeared sequentially on a screen for a period of 20 seconds each. To obtain the human-rated score, a rubric assessing five criteria (comprehensibility; phonemes; connected speech; word stress and rhythm; thought groups, sentence stress, and intonation) was used by three experienced ESL instructors who came to a consensus about each participant's score for each criterion. The same recordings were then played into GVT in Google Docs to obtain the GVT score. The output was analyzed manually with a point given for each correctly recognized word. The total number of points was divided by the total number of words in the sentences and multiplied by 100. Correlations were run to determine if a relationship existed between the human-rated and the GVT scores.

## 3. Results and discussion

The results are summarized in [Table 1](#) below. In answer to the first research question regarding the relationship between human-rated and GVT-rated scores, a statistically significant strong correlation was found between human-rated and GVT scores. Regarding the first sub-question about relationships between GVT scores and the rubric criteria (1a), statistically significant strong correlations were also found between each criterion and the GVT scores. In regard to the second sub-question concerning the relationship between GVT scores and test-taker proficiency (1b), a significant strong correlation was found for lower-proficiency test-takers (Beginner-Intermediate), but a non-significant weak correlation was found for higher-proficiency test-takers (Advanced-Fluent).

These findings corroborate the existing literature that found ASR scores correlate with human-rater scores (Cox & Davies, 2012; van der Walt et al., 2008). This study further contributes to the field as our findings seem to indicate that non-customizable ASR, such as GVT, is a valid option when automatizing the assessment of pronunciation.

In terms of [Bachman and Palmer's \(1996\)](#) test usefulness model, the use of GVT can improve the overall test usefulness of a pronunciation placement test. Validity,

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reliability, and practicality are the only three elements of the model affected by changing the assessment method. Validity may be somewhat reduced as GVT assessed intelligibility (e.g. what it understands) whereas the human raters assessed multiple aspects of pronunciation (e.g. comprehensibility and prosody). However, it allows for an increase in both reliability (i.e. the consistency of machine scoring) and practicality (i.e. reduced human resource costs and time to score tests).

Table 1. Descriptive statistics and correlations: GVT scores

Variable	M	SD	rho	p	95% BCa Cis
GVT Score (/100)	73.09	22.49	-	-	-
Human-rater score (/100)	72.00	26.95	.78**	<.001	.64,.88
Comprehensibility (/5)	4.14	1.20	.85**	<.001	.74,.90
Phonemes (/5)	3.39	1.47	.78**	<.001	.63,.88
Connected speech (/5)	3.34	1.51	.72**	<.001	.53,.84
Word stress and Rhythm (/5)	3.63	1.34	.71**	<.001	.52,.84
Thought groups, sentence stress, intonation (/5)	3.50	1.51	.79**	<.001	.65,.88
Lower-proficiency – GVT score (/100)	47.74	13.78	-	-	-
Lower-proficiency – Human-rater score (/100)	40.20	16.80	.78**	<.001	.56,.89
Higher-proficiency – GVT score (/100)	87.18	10.96	-	-	-
Higher-proficiency – Human-rater score (/100)	89.67	9.44	.28	.10	-.07,.56

Note. Confidence intervals based on 1,000 bootstrap samples.  
 \*\*p<.001.

## 4. Conclusions

The purpose of this study was to explore the use of GVT to score a pronunciation assessment. The findings reported indicate that GVT scores strongly correlated with human-rater scores, suggesting that non-customizable ASR could be leveraged to increase the usefulness of a placement test.

Certain limitations should be taken into consideration. With only 56 participants, the findings are not generalizable to other populations. Additionally, recordings were used rather than live speech, and at times, this may have affected the technology’s ability to correctly represent what was being said, negatively impacting the scores generated by GVT.

This study has shown the potential of using non-customizable ASR technology to score pronunciation placement tests. The next step is to fully automate the scoring process. This would provide opportunities to further research its use, such as determining if GVT has any biases in terms of first language, gender, or age.

Language programs and schools rely on placement tests to ensure that the learning experiences of students are optimal. Automating the placement process for pronunciation courses by using free and readily available technology such as GVT would allow institutions to offer their students a more streamlined and reliable service. Language programs and schools should consider taking advantage of it to facilitate the placement of students while at the same time ensuring that students continue to receive the learning experiences they want and deserve.

## 5. Acknowledgments

We would like to thank Vicente Amati and Taras Kamtchatnikov (*Centre d'évaluation des compétences linguistiques*). This research was funded by *Entente Canada-Québec* (UQAM, *École de langues*) and the *Social Sciences and Humanities Research Council of Canada* (Carol Johnson).

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# Motivation and reading in high-immersion virtual reality

Regina Kaplan-Rakowski<sup>1</sup> and Alice Gruber<sup>2</sup>

**Abstract.** Many language learners lack the motivation to read complex texts. Because high-immersion Virtual Reality (VR) is increasingly reported to be highly motivating, the goal of our study was to compare English as a Second Language (ESL) learners' ( $N=79$ ) motivation while reading a story with subtitles in VR (experimental group) versus reading the same story screencast in two-dimensions (2D – control group). The Wilcoxon signed-rank test revealed that learners' motivation in VR was significantly higher compared with the control group. Our finding confirmed that VR is highly motivational in the context of reading foreign texts and can be useful for Computer Assisted Language Learning (CALL) researchers, practitioners, and instructional designers. This analysis is a part of a larger study (Kaplan-Rakowski & Gruber, 2023) on VR facilitating reading tasks.

**Keywords:** motivation, high-immersion virtual reality, reading, subtitles.

## 1. Introduction

High motivation to practise languages is essential for their mastery. For practising complex language skills such as reading, high motivation is important as many learners today tend to limit their reading input to short text messages or social media posts. Therefore, devising approaches that allow students to read larger text passages without becoming demotivated have become increasingly important. Immersive technologies have come to the rescue because they can be highly engaging, immersive, and motivational (Kaplan-Rakowski & Meseberg, 2019). An example of such technology is high-immersion VR.

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**How to cite this article:** Kaplan-Rakowski, R., & Gruber, A. (2022). Motivation and reading in high-immersion virtual reality. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thoučsny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 208-213). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1460>

To experience VR, users need to wear a VR headset that serves as a viewing and interactional tool. Thanks to headtracking technology, users can experience 360° scenarios and feel that they are ‘there’, that is, in the middle of the scenario. Such a state is often referred to as the sense of presence (Slater, 2018) or immersion. Both concepts typically distinguish high-immersion VR from other immersive technologies because, as of 2022, no other technology offers as high levels of immersion as VR. Our definition of VR is “computer-generated 360° virtual space that can be perceived as being spatially realistic, due to the high immersion afforded by a head-mounted device” (Kaplan-Rakowski & Gruber, 2019, p. 552).

The use of Virtual Reality-Assisted Language Learning (VRALL) has been on the rise. While VRALL research has been limited and clear benefits of VR learning outcomes are still inconclusive (Dhimolea, Kaplan-Rakowski, & Lin, 2022), language scholars have been exploring VR affordances to practise various language aspects including vocabulary learning (Papin & Kaplan-Rakowski, 2022), communication (Gruber & Kaplan-Rakowski, 2022), and foreign language anxiety (Gruber & Kaplan-Rakowski, 2020, 2023; Thrasher, 2021).

This study focused on reading subtitles which differs from traditional forms of reading. Research on reading subtitles in CALL has been extensive (see, e.g. Pattemore & Muñoz, 2020; Winke, Gass, & Sydorenko, 2010), but the new form of digital reading of subtitles in VR needs to be explored. Our research question was: does reading a story in a foreign language in VR enhance motivation compared with reading the same story in a video screencast capture on a 2D screen?

## 2. Method

The study sample consisted of 79 intermediate ESL students at a German university. The volunteers signed a letter of consent and were instructed individually on how to use the VR device (Oculus Quest 2). The participants were randomly assigned to two groups and were tasked to read an identical 20-minute interactive story in English in two different formats. The experimental group used high-immersion VR, wearing a VR headset, and the control group viewed the screenshot video of the same story on a 2D screen (see Figure 1). A screenshot of a part of the story read by the students is displayed in Figure 2. The groups had a comparable distribution of participants’ gender, age, L1, and L2 (English) proficiency.

Figure 1. Participants reading in VR (left) and on a two-dimensional screen (right)



The story consisted of about 1,000 words, which is equivalent to two double-spaced pages. Unlike the control group, the experimental group could interact with the setting using the haptic system (i.e. virtual hands) and could benefit from the 360° experience using headtracking. Such actions allowed for higher immersion and a sense of agency (Kaplan-Rakowski & Gruber, 2021).

Figure 2. A screenshot of a part of the story



Note. The use of virtual hands offers the possibility of interaction within the story. Subtitles help follow the story.

In addition to the demographic questionnaire eliciting information such as gender, age, L1, and L2 level, the participants completed a survey with the goal of measuring levels of motivation across conditions. This survey was based on

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the Intrinsic Motivation Inventory and consisted of nine five-point Likert-scale items. The items assessed levels of self-perceived enjoyment, effort, value, and competence. The choices of agreement ranged from ‘not at all true’, to ‘somewhat true’, to ‘very true’. The instrument had excellent internal reliability ( $\alpha = .92$ ). To calculate differences between the levels of motivation between the two groups, we used the Wilcoxon signed-rank test.

### 3. Results and discussion

The Wilcoxon signed-rank test revealed that motivation of the VR group was statistically significantly higher than the 2D desktop group ( $Z=6.33$ ,  $p<.0001$ ). The robustness of this finding is very strong as indicated by a very high effect size (Cohen’s  $d=1.94$ ). The descriptive statistics of the VR group ( $n=35$ ) were  $M=4.50$ ,  $SD=.59$ ,  $Min=2.14$ ,  $Max=5.00$ ; of the video group ( $n=44$ ), they were  $M=3.12$ ,  $SD=.79$ ,  $Min=1.57$ ,  $Max=5.00$ .

A systematic review of VRALL research (Dhimolea et al., 2022) showed that students reveal high levels of motivation while using VR. Our results add to this line of research and confirm results of other language scholars (Alfadi, 2020; Kaplan-Rakowski & Wojdyski, 2018; Pack, Barrett, Liang, & Monteiro, 2020). However, the context of the other studies differed from ours as they focused either on vocabulary learning, communicative skills, or writing, without exploring reading in VR.

Compared to the control condition, the experimental condition in VR was more interactive and had an increased sense of agency and immersion. The video condition was passive as it involved following the story on a 2D screen which had been recorded in VR (see video screencast: <https://tinyurl.com/mcbtkyn4>). Because we did not use eye-tracking technology, the exact ratio of time spent on reading the text and exploring other parts of the scenery within the VR story is unknown, thus, limiting our study. We could treat our experimental and control conditions holistically, assuming that their overall affordances impacted the perceived levels of motivation.

### 4. Conclusions

This one-time-intervention study confirmed that VR has potential to motivate and engage students in the context of reading comprehension tasks. Further

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studies should measure other factors such as cognitive load, sense of presence, and ability to comprehend the text (Kaplan-Rakowski & Gruber, 2023). Because reading tasks are often considered difficult and dull, offering language learners the possibility of reading text with subtitles within VR is a viable option that would expose them to written input and, consequently, foster the expansion of vocabulary, grammar structures, and other key factors that boost language proficiency.

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# Students' perceptions of digital storytelling in online EFL classes with Zoom at a Japanese university

Naoko Kasami<sup>1</sup>

**Abstract.** This study reports on the results of students' perceptions of Digital Storytelling (DS) in online classes enhanced with synchronous Zoom meetings. Two main problems were identified with remote English as a Foreign Language (EFL) courses conducted primarily as asynchronous classes in spring 2020. Firstly, seven of the 64 participating students (10.9%) found the DS assignment very difficult. Secondly, there should be more opportunities for students to learn from others. In order to solve these problems, the courses in spring 2021 were enhanced with synchronous (90-minute) Zoom meetings held approximately every two weeks to increase interaction and support in the classes. The analysis of the post-questionnaires showed that there was a slight improvement, with only five out of 77 students (6.5%) reporting that they found the DS assignment very difficult; most students (92.2%) rated the difficulty level of the assignment as appropriate. Regarding learning from others, there were more positive responses from students in 2021.

**Keywords:** digital storytelling, online learning, Zoom, EFL.

## 1. Introduction

During the COVID-19 pandemic, there was a rapid transition from classroom learning to online learning. In the field of Computer Assisted Language Learning (CALL), there have been positive findings in regard to the implementation of videos in language education (Yu & Zadorozhnyy, 2022), and synchronous

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**How to cite this article:** Kasami, N. (2022). Students' perceptions of digital storytelling in online EFL classes with Zoom at a Japanese university. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouësný, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 214-221). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1461>

learning with video communication apps such as Zoom and Google Meet have become widely used. Numerous studies have demonstrated the advantages of using 'breakout rooms' in these apps (Kohnke & Moorhouse, 2020; Siang & Mohamad, 2022).

At EUROCALL 2021, the author reported students' perceptions of DS in primarily asynchronous EFL classes at a Japanese university (Kasami, 2021). The study reported on findings from asynchronous classes held during spring 2020 due to COVID-19, using pre-recorded materials, which were supported by complementary short (30-minute) synchronous online meetings every few weeks. There were two main problems with the use of primarily asynchronous classes. Firstly, as seven of the 64 participating students (10.9%) found the DS assignment very difficult, there was a need for more appropriate language and technical support. Secondly, there was a need to provide more opportunities for students to have collaborative and interactive learning.

In order to solve these problems, the courses were redesigned. The courses in spring 2021 were enhanced with synchronous (90-minute) Zoom meetings held approximately every two weeks. During these meetings, students were encouraged to communicate in groups through the use of 'breakout rooms'. The rooms encouraged students to speak and write in English with others and to provide peer-reviews of their assignments. They were also expected to ask questions during the meetings or at the end of the meetings. A few optional meetings were held only for those who wished to ask additional questions or who requested individual support. In addition, answers to frequently asked questions related to DS were revised and shared to support students.

Thus, the purpose of the present study was to examine students' perceptions of the DS in online classes enhanced with synchronous Zoom meetings in EFL courses which ran from April to July 2021.

This study aimed to answer three research questions:

RQ1. How difficult was the DS assignment?

RQ2. What were students' perceptions of learning from others and the frequency of the meetings?

RQ3. What were the pros and cons of the DS assignment from the student's perspective?

## 2. Method

### 2.1. Participants

Most students were basic or intermediate level English learners (from A1 to B1 on the Common European Framework of Reference for Languages proficiency levels) majoring in Information and Communications Technology (ICT) related fields. In spring 2021, 90 students enrolled on three elective EFL courses for second to fourth year students, and 77 students agreed to participate in this research by answering a post-questionnaire survey. The study goal of the course was to acquire skills and knowledge to present ideas and messages effectively using ICT and English. DS was the main assignment of the course. The amount and conditions of the DS assignments were identical to the previous year.

### 2.2. Data collection

In the course, three questionnaires were employed during the term, as had been used in the past courses (Kasami, 2021). The post-questionnaires consisted of four sections (general impression of the remote course, students' perceptions of DS, self-evaluation of DS, and learning motivation) in the same format as previous questionnaires. Like the previous study (Kasami, 2021), questions on students' perceptions of DS were generated in line with studies by Jamieson, Chapelle, and Preiss (2005, pp.131-133). Only a few questions on the general impression of the remote course and students' perceptions of DS in the post-questionnaire were focused upon in this study. The post-questionnaires were conducted at the end of the course and were created using Google Forms with a combination of closed and open-ended questions.

## 3. Results and discussion

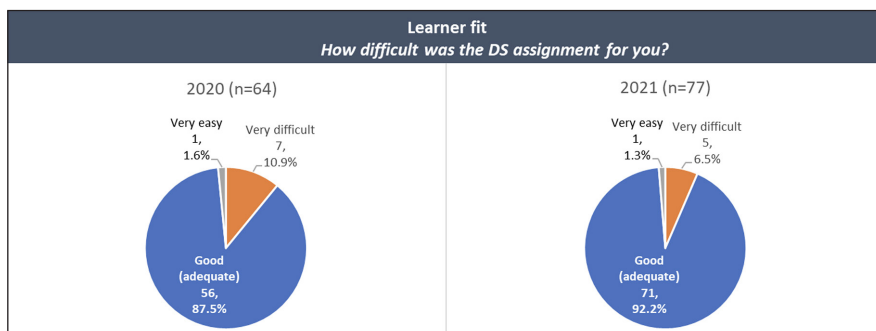
### 3.1. Difficulty and ease of the assignment

The aspects of 'learner fit' and 'practicality' analyzed in the previous study (Kasami, 2021) were also focused upon in this study.

In spring 2020, students were asked about the difficulty of the DS assignment through the question 'how difficult was the DS assignment for you?' (Figure 1).

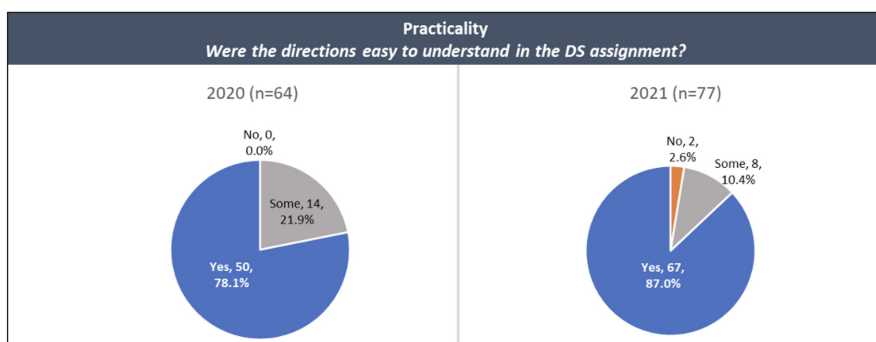
Though most of the students (87.5%) reported that the DS assignment was set at a good level of difficulty, 10.9% of students felt it was very difficult. In spring 2021, fewer students (6.5%) answered that it was very difficult, and more of the students (92.2%) reported that the DS assignment was set at an appropriate level of difficulty.

Figure 1. Learner fit



While in spring 2020, 78.1% of students answered positively to the question ‘were the directions easy to understand in the DS assignment’, in spring 2021, 87% of students answered positively (Figure 2).

Figure 2. Practicality

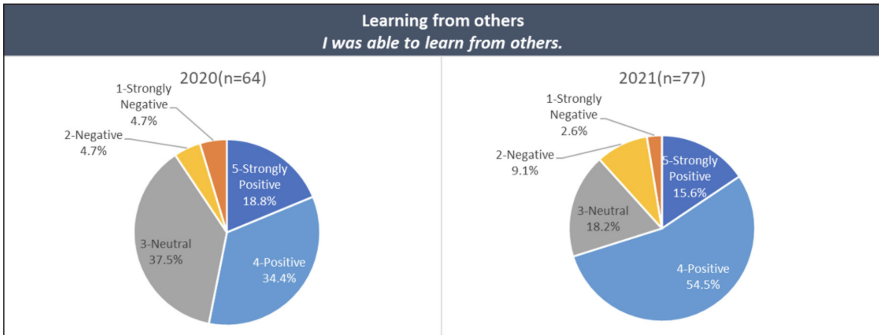


### 3.2. Learning from others in Zoom meetings

Regarding collaborative learning, for the statement ‘I was able to learn from others’, the students were asked to indicate their degree of agreement on a five-point Likert scale (1-Strongly Negative, 2-Negative, 3-Neutral, 4-Positive, 5-Strongly Positive).

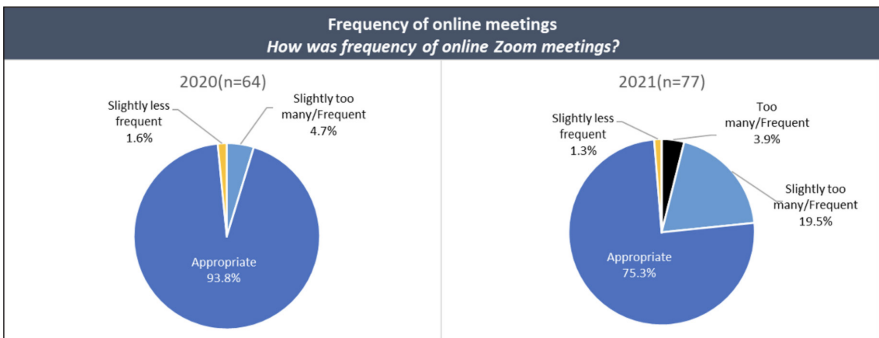
There were more positive responses from students in 2021. Positive responses (4-Positive, 5-Strongly Positive) were received from 53.2% of the students in spring 2020, but this improved to 70.1% in spring 2021 (Figure 3).

Figure 3. Learning from others



As for the frequency of meetings, the number of students who answered ‘appropriate’ decreased from 93.8% in 2020 to 75.3% in 2021. At the same time, the number of students who answered ‘slightly too many/frequent’ or ‘too many/frequent’ increased from 4.7% in 2020 to 23.4% in 2021. In both years, only one student answered ‘slightly less frequent’, and nobody answered ‘too infrequent’ (Figure 4).

Figure 4. Frequency of meetings

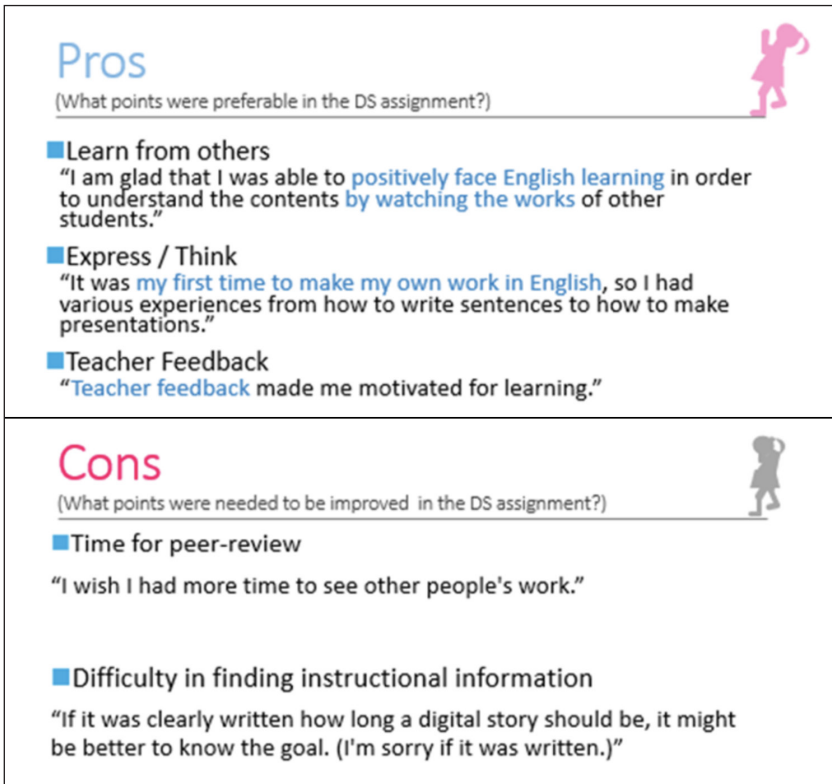


### 3.3. What were the pros and cons of the DS assignment

Two open-ended questions were presented, and answers were solicited from students. For the question ‘what points were preferable in the DS assignment?’,

there were 26 responses as follows. All the responses were separated into six categories according to common words: (1) 'Learning from others' (n=10), (2) 'Express/Think' (n=4), (3) 'ICT skills' (n=4), (4) 'Teacher feedback' (n=3), (5) 'Interesting/Fun' (n=3), and (6) 'Sense of accomplishment' (n=2). Figure 5 shows examples of students' comments.

Figure 5. Students' comments



For the question 'what points needed to be improved in the DS assignment', there were seven responses, and the common words were (1) 'Time for peer-review' (n=2) and (2) 'Difficulty in finding instructional information' (n=2).

These comments showed that more Zoom meetings enabled students to have more learning opportunities with classmates which consequently made it easier to complete the DS assignment. The frequency and length of meetings and assignments were generally regarded as appropriate, but there were also some students who preferred fewer meetings as they seemed to proceed with their assignments on

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their own. On the other hand, a few students preferred having more interactions with others and additional support to understand what to do. Based on various comments, it would be important for teachers to engage students' personal voices and exploit digital technology appropriately in language education as outlined by Ushioda (2011).

## 4. Conclusions

The DS assignments were conducted more effectively with other students in online classes when enhanced with synchronous Zoom meetings compared with primarily asynchronous classes. Yu and Zadorozhnyy (2022) observed that creating video was perceived positively though some students experienced difficulties due to lacking some skills and knowledge. In accordance with this, most students perceived the difficulty level and learning from others positively while there were also some students who felt the assignment was difficult and advanced students who did not need some meetings. These various responses suggest that future courses and study may benefit from different lesson styles (such as face-to-face, hybrid, synchronous, and asynchronous) which students can select according to their preferences and conditions.

## 5. Acknowledgments

I would like to thank Dr Julian Lewis for his advice on my paper.

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# Teachers' physiological signals to improve teacher-student relationships

Olivia Kennedy<sup>1</sup>, Sandra Healy<sup>2</sup>, Chie Fukada<sup>3</sup>,  
and Noriaki Kuwahara<sup>4</sup>

**Abstract.** In this study we explore how the physical movements teachers use can lead to improved interactions between students in a university language course. The study used video to capture and analyse an intervention focusing on the effects of teacher nodding. Results showed that positive measurable differences were found in students' physical postural responses in relation to the frequency with which their teacher nodded. The next stage of this preliminary research project will make use of the data gathered on micro-level interactions to develop technological support mechanisms to be used in the classroom to support teacher-student interactions.

**Keywords:** physiological signals, teacher-student relationship, body posture, student interaction, micro-level interactions.

## 1. Introduction

Positive teacher-student relationships are known to support student learning (Allen et al., 2021), and there are many standard strategies that teachers employ to build positive relationships within their classrooms. It is important, however, to further foster classroom relationships for the benefit of both teachers and students and to harness technology to do so. Micro-level interactions affect how classroom relationships are perceived (Wubbels, 2018) and can be captured, analysed, and then used to improve interactions via technological intervention. In this study

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**How to cite this article:** Kennedy, O., Healy, S., Fukada, C., & Kuwahara, N. (2022). Teachers' physiological signals to improve teacher-student relationships. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thoušný, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 222-227). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1462>

we explore how the physical movements used in teaching can lead to improved interactions between students. We hope to build a base of knowledge to allow for technological classroom support mechanisms to be effectively developed. The study utilises embodied cognition, the ways that “body movements both express and influence how people feel and think” (Chandler & Schwarz, 2009, p. 123), and specifically focuses on the effects of teacher nodding.

A wide variety of experiments exploring embodiment show that our “thoughts, feelings and behaviours are grounded in bodily interaction with the environment” (Meier, Schnall, Schwarz, & Bargh, 2012, p. 705). Some of these experiments show, for example, that facial expressions (Buck, 1980), arm movements (Förster & Strack, 1997), or how often we nod (Briñol & Petty, 2003; Wells & Petty, 1980) can affect our mental processes including the ways that we perceive ourselves and/or others (Mussweiler, 2006). Nodding is almost universally understood to be a positive signal (Helweg-Larsen, Cunningham, Carrico, & Pergram, 2004) that previous studies suggest correlates with likeability (Godfrey, Jones, & Lord, 1986). Some studies suggest that the *chameleon effect*, seen when a person unconsciously copies the physical behaviours of the people that they are with, eases interactions between people and increases how positive they feel towards one another (Chartrand & Bargh, 1999). In addition, as face coverings are presently omnipresent to contain the spread of COVID-19 and may remain so indefinitely, it has become important to explore these physical responses. The work of, for example, de Gelder (2009), which finds that physical responses such as torso and head angle show more consistent and reliable information than facial responses, is particularly reassuring in this context. This preliminary research article investigates whether increased nodding by the teacher has an impact on student-to-student interaction and posits that the enthusiasm displayed by students as teacher nodding increases may be due to more positive perceptions of the teacher and, by extension, student relationships with them.

## 2. Method

Classroom observations were undertaken in a compulsory first-year English as a foreign language class in a Japanese university with an experienced female instructor in Week 13 of a 15-week course. The two female and 14 male participants are between 18 and 20 years old. All participants were informed that their class would be observed and digitally recorded one week prior and gave informed consent according to institutional policies. In line with institutional COVID-19 practice, all participants wore face coverings.

Three video cameras were placed in the classroom; one wide-lens camera trained on the teacher, and the others placed on either side of the rear. These also recorded the ambient classroom sound on internal microphones. During the first 45 minutes of the 90-minute observation, the teacher was asked to teach as usual. During the second 45 minutes, the teacher was prompted intermittently with a visual cue from the rear of the classroom to increase nodding during her next interaction. Data was coded using [ELAN \(2022\)](#), with attention paid to teacher nodding during teacher-student interactions and to the angle and direction of student torsos and gaze during student-student interactions. The students first read a short passage individually then completed several short discussion activities in pairs. Between discussions, the teacher called for attention and gave general feedback before setting the next task.

### 3. Results and discussion

Two three-minute segments of the 90-minute lesson were chosen for comparison. In both segments, the teacher introduced a discussion topic, then asked the class to talk with a partner. The segments selected were the fourth and fifth discussions for the lesson. In the first, the teacher taught as she normally would, nodding in encouragement to students who asked questions and interacted with her, and to signal the end of her conversational turn. In the second, following the cue to increase nodding, the teacher nodded more often, and the vertical range of head motion was much greater. In addition to the functions mentioned above, she also nodded decisively when choosing an example to illustrate her point, and when setting the time limit for the class to undertake the activity.

The way that student participants undertook pair-work activities in these two segments was markedly different. The first of these is illustrated by [Figure 1](#). This video still was taken 14s03ms milliseconds after the students were asked to begin the first activity. Nine participants are visible, eight students and the teacher. Pair 1 is seated closest to the camera, and Pair 4 furthest away.

In the first segment, the time between the teacher asking the class to begin the activity and the first utterances from the student participants ranged between 1s37ms and 6s45ms. It took between 3s09ms and 10s22ms for the four pairs of students to reach their closest physical positions to one another. Postural mirroring was achieved by three of the four pairs within 1m46s68ms. In [Figure 1](#), Pair 2 can be seen to have the same torso direction and angle, and a shared focal point. While Pair 1, closest to the camera, began talking first of the four pairs

visible, they did not make eye contact, share a joint focal point, or mirror one another's torso angle during this segment.

Figure 1. Screenshot of Activity 4 (14s03ms milliseconds elapsed)



In the second segment, however, all parameters occur measurably more quickly. As can be seen in [Figure 2](#), taken 5s00ms from the start of the activity, Pair 1 have turned their torsos parallel to one another, a mirroring action that was not fully achieved by any of the pairs in the previous segment. They also share eye contact. Pair 2 are also sharing a focal point, leaning towards one another, and mirroring posture with one dropped shoulder.

Figure 2. Screenshot of Activity 5 (5s00ms milliseconds elapsed)



#### 4. Conclusions

While only three parameters are analysed here in a small number of participants, the measurable differences in their postural responses show clearly that the frequency with which their teacher nods has a positive effect on the learning environment. The next stage of this preliminary research project will make use of the data gathered on micro-level interactions to develop technological support mechanisms to be

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used in the classroom to support teacher-student interactions. Under consideration is advice to prompt the teacher to nod more frequently, and thereby ensure the continued impact of this low-investment, high-return intervention.

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# Learning L2 pronunciation with Google Translate

Hamidreza Khademi<sup>1</sup> and Walcir Cardoso<sup>2</sup>

**Abstract.** This article, based on Khademi's (2021) Master's thesis, examines the use of Google Translate (GT) and its speech capabilities, Text-to-Speech Synthesis (TTS) and Automatic Speech Recognition (ASR), in helping L2 learners acquire the pronunciation of English past -ed allomorphy (/t/, /d/, /ɪd/) in a semi-autonomous context, considering three levels of pronunciation development: phonological awareness, perception, and production. Our pre/posttest results indicate significant improvements in the participants' awareness and perception of the English past -ed, but no improvements in production (except for /ɪd/). These findings corroborate our hypothesis that GT's speech capabilities can be used as pedagogical tools to help learners acquire the target pronunciation feature.

**Keywords:** text-to-speech synthesis, automatic speech recognition, L2 pronunciation, Google Translate.

## 1. Introduction

The limited amount of time is one of the problems that teachers and second language (L2) students face in language classrooms (Collins & Muñoz, 2016). Such constraint deprives students of receiving sufficient linguistic input (e.g. listening to the L2) and producing output (e.g. speaking with others). One of the areas in which such time restrictions can negatively impact learning is L2 pronunciation, as it requires hours of practice (Everly, 2019) and it must address at least three stages of phonological development: phonological awareness, perception, and production (Celce-Murcia, Brinton, & Goodwin, 2010). To address this limitation and at the same time encourage students to practice, teachers often ask their students to engage

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**How to cite this article:** Khademi, H., & Cardoso, W. (2022). Learning L2 pronunciation with Google Translate. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 228-233). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1463>

in self-directed, out-of-classroom activities in the form of homework assignments, using technologies such as TTS and ASR. TTS and ASR can be used as effective pedagogical tools for pronunciation (Liakin, Cardoso, & Liakina, 2017), as they engage learners with a wide range of out-of-classroom activities, including the promotion of input (TTS) and output (ASR) practice. Their use also contributes to fostering learners' autonomy beyond the walls of classrooms (Van Lieshout & Cardoso, 2022).

However, TTS and ASR have only been studied separately (for an exception, see Van Lieshout & Cardoso, 2022). Therefore, little is known about the feasibility of using TTS and ASR combined (as found in GT) as pedagogical tools, nor do we understand what happens when learners are asked to use the technology on their own, outside of their classrooms (e.g. to complete homework assignments). To address this gap, this study asked the following question: using GT's TTS and ASR capabilities in a teacher-guided semi-autonomous context, can English learners acquire the pronunciation of English past -ed allomorphy (/t/, /d/, /id) in terms of awareness, perception, and production?

## 2. Method

Following a pretest-posttest research design, 20 intermediate-level English as a second language students (age: 30-40; L1: Farsi) were recruited to participate in this two-hour one-shot study. Participants took a set of pretests on awareness, perception (aural discrimination), and production of the past -ed allomorphy. Two instruments were adopted for each measure, for a total of six tests.

For awareness, participants were asked to answer four open-ended questions to determine whether they knew how past -ed is pronounced (Test 1), and then asked to match a set of past tense verbs based on how they believed their inflections are pronounced (i.e. they had to choose *used* for /d/, *added* /id/, and *asked* /t/; Test 2). For perception, two tests required participants to aurally discriminate between past and non-past constructions (Test 1) and then identify the -ed allomorph among those selected as 'past' (Test 2). Finally, for production, participants engaged in two audio-recorded tests: they read aloud a list of words containing past -ed forms (Test 1), followed by a less controlled speaking task in which they role-played an 'interview' with one of the researchers.

After completing the pretests, participants watched a video containing instructions on how the regular past tense is formed (without any information

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about pronunciation), and how to use GT’s speech features. For the treatment, which emulated the completion of a homework assignment, participants engaged in activities that encouraged them to listen (via TTS; e.g. they copied and pasted a text into GT, listened to it, and then filled-in blank spaces) and produce the target forms (via ASR; e.g. they read aloud past -ed forms into GT and then verified if the intended form was transcribed correctly). At the end of the experiment, participants completed six posttests (similar to the pretests, but containing randomized items).

### 3. Results

Using t-tests, the participants’ performance was analyzed in terms of phonological awareness, aural discrimination (perception), and production.

**Awareness:** The results from the two awareness tests indicate that the pedagogical use of GT’s speech capabilities contributed to the participants’ development of awareness of past -ed allomorphy (Table 1), particularly regarding /id/ and /t/ (but not /d/; Table 2).

Table 1. Awareness #1

	Pretest		Posttest		t-test
	M/4	SD	M/4	SD	
Total	3.30	0.80	3.80	0.41	*-3.24

\*p ≤ 0.05  
 Note. M/4=Mean (out of 4); SD=Standard Deviation.

Table 2. Awareness #2

	Pretest		Posttest		t-test
	M/7	SD	M/7	SD	
/d/	3.90	1.45	4.35	1.14	-1.53
/id/	2.85	1.04	4	1.02	*-3.81
/t/	1.55	0.99	2.3	1.03	*-2.44
Total /21	8.30	1.69	10.65	2.00	*-5.17

\*p ≤ 0.05

**Perception:** Findings from both tests indicate that the GT-based treatment helped the participants improve their perception of -ed allomorphy in general (Table 3) and across the three allomorphs (Table 4).

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Table 3. Perception #1

	Pretest		Posttest		t-test
	M/15	SD	M/15	SD	
Total	10.65	1.98	12.25	0.91	*-5.14

\*p ≤ 0.05

Table 4. Perception #2

	Pretest		Posttest		t-test
	M/5	SD	M/5	SD	
/d/	1.65	0.81	2.4	0.68	*-4.26
/id/	2.4	0.68	3.4	0.59	*-7.96
/t/	0.9	0.71	1.3	0.66	*-2.18
Total /15	4.95	1.54	7.1	1.25	*-9.73

\*p ≤ 0.05

**Production:** Finally, the results for production in both tests (Table 5 and Table 6) indicate that the proposed pedagogical intervention had no effect on the improvement of -ed among the participants. When considered in isolation, only the production of the /id/ allomorph was positively affected by the treatment.

Table 5. Production #1

	Pretest		Posttest		t-test
	M/20	SD	M/20	SD	
/d/	7.15	2.30	6.90	2.38	1.31
/id/	5.05	1.96	5.65	2.18	*-2.85
/t/	3.60	1.57	3.65	1.69	-0.22
Total /60	15.80	5.54	16.20	5.54	-1.28

\*p ≤ 0.05

Table 6. Production #2

	Pretest		Posttest		t-test
	M/10	SD	M/10	SD	
/d/	3.70	1.45	3.55	1.54	0.90
/id/	2.55	1.19	2.95	1.19	*-2.63
/t/	0.90	0.85	0.95	0.82	-0.32
Total /30	7.15	3.23	7.45	2.99	-1.24

\*p ≤ 0.05

#### 4. Discussion and conclusion

This study examined the use of GT and its embedded speech features (TTS, ASR) as L2 pronunciation learning tools to find out whether English learners can acquire the pronunciation of English past -ed in terms of awareness, perception, and production in a teacher-guided semi-autonomous context (conceptualized as a homework assignment). Our findings suggest that there were significant improvements in both the participants' awareness and perception of English past -ed allomorphy, thus confirming the hypothesis that the pedagogical use of GT and its speech capabilities can help learners acquire the target pronunciation feature in these two first stages of L2 pronunciation development (Celce-Murcia et al., 2010). However, in terms of production, no significant progress was observed, except for /id/.

Considering the above mentioned findings, the present study offers some important pedagogical implications. The most important one is that it has demonstrated that learners can acquire certain aspects of L2 pronunciation (e.g. phonological awareness and perception of past -ed allomorphy) when engaged in teacher-initiated semi-autonomous activities such as those that characterize homework assignments. Via technologies such as GT and its speech capabilities, teachers can mitigate the time limitation that precludes them from focusing on pronunciation instruction, and consequently extend the reach of their classrooms to an environment that has the potential to provide input that is abundant and varied (via TTS), with ample opportunities for production practice and feedback (via ASR).

Despite these encouraging results, there are limitations that need to be addressed in further investigation. The first main limitation relates to the two-hour duration of the study, as research has shown that English learners need more than two hours of practice to acquire past -ed (Cardoso, 2018). Although we recognize this limitation, we also acknowledge that there is ecological validity in our pedagogical implementation, as it simulates a common learning situation in which students are asked to complete homework assignments on their own, with accessible technology such as GT. Another limitation is the number (n=20) and uniformity of the target population (Farsi L1 native speakers). Although our findings support the hypothesis that GT can help these learners improve their pronunciation skills, it is not clear whether these findings are generalizable to the larger population of English learners.

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## Linggle 2.0: a collocation retrieval system with quality example sentences

Shu-Li Lai<sup>1</sup>, Jason Chang<sup>2</sup>, Kuan-Lin Lee<sup>3</sup>, and Wei-Chung Huang<sup>4</sup>

**Abstract.** Linggle is a pattern-based referencing tool that assists in collocation learning. In this ongoing project, we aimed to improve its performance further. First, many of the example sentences are long and difficult for students to understand, so we used a machine learning method and trained a classifier to help select dictionary-like example sentences. Second, we created a database of 60,270,000 sentences from 4C, S2ORC, and VOA Learning English. We also included Google books for real-time supplements. Then, we applied the classifier to select good example sentences from the database for display. We also limited the number of example sentences displayed for search results to improve users' experiences. Two classes of English as a Foreign Language (EFL) college students (N=51) were invited to use the enhanced tool and filled out a questionnaire. The results showed that the students were positive about Linggle's new interface and the quality of the example sentences. We expect that more EFL learners will benefit from the tool.

**Keywords:** collocation tool, example sentences, machine learning, interface.

### 1. Introduction

For EFL writers, dictionaries are essential tools that help transform learners' ideas into language. However, it is not always easy to find information on collocation and lexical grammar in a dictionary. In recent years, corpus tools have gained attention. Research has shown that corpus tools can supplement dictionaries to provide information on collocation and lexical grammar (Lai & Chen, 2015). Learners

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**How to cite this article:** Lai, S.-L., Chang, J., Lee, K.-L., & Huang, W.-C. (2022). Linggle 2.0: a collocation retrieval system with quality example sentences. In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 234-239). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1464>

can generate rules from corpus examples and learn how words and phrases are used in context (i.e. data-driven learning, see [Boulton, 2017](#)). However, observing corpus data can be time-consuming ([Yoon, 2016](#)), and it is especially challenging for students with lower English proficiency.

The Linggle collocation retrieval system is a web-based service that generates and displays information through recurring word patterns (<https://linggle.com/>). After typing keywords and simple syntax commands, the system shows information on collocation explicitly. Linggle has been through several revisions since the first prototype was developed ([Boisson et al., 2013](#)). In an empirical study that we conducted on the earlier version of Linggle, students found the tool easy to use and very efficient in helping them find collocation information ([Lai & Chang, 2020](#)).

However, there were some problems and room for improvement. Many of the example sentences are long and difficult to understand in the current version. Students also complained that there were too many example sentences, which overwhelmed them. Authentic sentences are often long and more complicated. In this ongoing project, we aimed to improve the quality of the example sentences to make them easier for language learners to read. Second, we also aimed to improve the interface so users would not be overwhelmed. Finally, we recruited two classes of EFL college students to evaluate the enhanced tool.

## **2. Method**

### **2.1. Procedure**

The Internet has plenty of texts, so it is easy to find sentences containing certain patterns or collocations. However, some sentences may not be appropriate for language learners because they are too difficult to understand. Inspired by the GDEX model ([Kilgarriff et al., 2008](#)), we originally planned to take a rule-based approach to extract sentences from the web. For example, limit the sentence length, eliminate non-alphanumeric characters, and exclude sentences containing blacklist words. However, we found that sentences fitting the rules were not necessarily good example sentences. Some were still difficult to comprehend and contained difficult words. Our project took a different approach: we used the machine learning method and trained a classifier to help select dictionary-like examples automatically.



We used the pre-trained BERT model to extract features for the classifier. Positive data included 140,000 example sentences from the Cambridge dictionary and negative data comprised a random sample of 140,000 example sentences from Wikipedia, as those sentences are typically not as good as sentences from the learners' dictionaries for language learning purposes. The two sets of sentences were combined to create a dataset for training, developing, and testing. For training and development purposes, we randomly split the dataset into a training set (80%), a development set (10%), and a test set (10%). After training, the test set was used to evaluate the performance of the model. The average accuracy was 0.95, indicating that the model was capable of distinguishing between good (dictionary-like) and bad (not dictionary-like) sentences. Then, we applied this model to a collection of open-source corpora to create an example dataset for retrieving and presenting quality example sentences for words and phrases in our enhanced collocation retrieval system.

## **2.2. Corpus**

We used 60,270,000 sentences from four sources to compile our dataset of example sentences: C4, S2ORC, VOA Learning English, and Google books. We sampled about 30 million sentences from the subset of 'realnewslike' in Google's C4, a colossal corpus of cleaned web crawl data, to expand coverage of the topic; 30 million sentences from S2ORC, an enormous corpus of scientific journals from the Allen Institute for AI; 270,000 sentences from VOA Learning English; and Google books for real-time supplement sentences if there were any phrases not covered by the previous three corpora.

## **2.3. Interface**

The major modification was the restriction of example phrases for each collocation combination. Using 'to gain knowledge' as an example, the upgraded 2.0 version of the system presented five example phrases to users first. If the user clicked on 'show more', the system displayed five additional sentences, as shown in [Figure 1](#) and [Figure 2](#) below.

## **2.4. Questionnaire**

We conducted a small-scale study with 51 EFL college students to collect their initial feedback. The participants' proficiency levels ranged from A2 to B2. Three class meetings were arranged to orient the students to learn the concept of corpus, collocation, and the syntax commands of Linggle. A six-point Likert scale

questionnaire was designed to understand their experiences in using the upgraded version of the system and to elicit comments.

Figure 1. Example sentences for ‘to gain knowledge’

The screenshot shows a search interface with a search bar containing 'to v. knowledge' and a magnifying glass icon. Below the search bar is a table with three columns: 'Phrases', '%', and 'Count'. The table lists two phrases: 'to share knowledge' with 11.4% and 84,000 counts, and 'to gain knowledge' with 10% and 74,000 counts. The 'to gain knowledge' row is highlighted with a red underline. Below the table is a list of example sentences, each with the phrase 'to gain knowledge' highlighted in red. The sentences are: 'You read a recipe to gain knowledge about baking rhubarb pie.', 'Do researchers apply a special kind of work process or procedures to gain knowledge?', 'Credit is a pragmatic good that we gain through believing well enough to gain knowledge.', 'While you broaden your professional circle, leverage the opportunity to gain knowledge rapidly.', and 'It is fundamental to gain knowledge regarding strategies that can potentiate neural regeneration.' A 'Show more' link is visible at the bottom of the list.

Phrases	%	Count
to share knowledge	11.4%	84,000
to gain knowledge	10%	74,000

- You read a recipe **to gain knowledge** about baking rhubarb pie.
- Do researchers apply a special kind of work process or procedures **to gain knowledge**?
- Credit is a pragmatic good that we gain through believing well enough **to gain knowledge**.
- While you broaden your professional circle, leverage the opportunity **to gain knowledge** rapidly.
- It is fundamental **to gain knowledge** regarding strategies that can potentiate neural regeneration.

~ Show more

Figure 2. More example sentences for ‘to gain knowledge’

The screenshot shows a search interface with a search bar containing 'to gain knowledge' and a magnifying glass icon. Below the search bar is a table with three columns: 'Phrases', '%', and 'Count'. The table lists one phrase: 'to gain knowledge' with 10% and 74,000 counts. The 'to gain knowledge' row is highlighted with a red underline. Below the table is a list of example sentences, each with the phrase 'to gain knowledge' highlighted in red. The sentences are: 'You read a recipe to gain knowledge about baking rhubarb pie.', 'Do researchers apply a special kind of work process or procedures to gain knowledge?', 'Credit is a pragmatic good that we gain through believing well enough to gain knowledge.', 'While you broaden your professional circle, leverage the opportunity to gain knowledge rapidly.', 'It is fundamental to gain knowledge regarding strategies that can potentiate neural regeneration.', 'The FSFI questionnaire allows us to gain knowledge about female sexuality and the factors affecting it.', 'This Internet-assisted learning facility has given children the opportunity to gain knowledge on the go.', 'Third, students defined career communities as opportunities to gain knowledge they could not find online.', 'The discussions with experts gave an opportunity to gain knowledge of the target group's and their stress.', and 'Some trainees thought they should study these problems more extensively to gain knowledge for future cases.' A 'Show less' link is visible at the bottom of the list.

Phrases	%	Count
to gain knowledge	10%	74,000

- You read a recipe **to gain knowledge** about baking rhubarb pie.
- Do researchers apply a special kind of work process or procedures **to gain knowledge**?
- Credit is a pragmatic good that we gain through believing well enough **to gain knowledge**.
- While you broaden your professional circle, leverage the opportunity **to gain knowledge** rapidly.
- It is fundamental **to gain knowledge** regarding strategies that can potentiate neural regeneration.
- The FSFI questionnaire allows us **to gain knowledge** about female sexuality and the factors affecting it.
- This Internet-assisted learning facility has given children the opportunity **to gain knowledge** on the go.
- Third, students defined career communities as opportunities **to gain knowledge** they could not find online.
- The discussions with experts gave an opportunity **to gain knowledge** of the target group's and their stress.
- Some trainees thought they should study these problems more extensively **to gain knowledge** for future cases.

^ Show less

### 3. Results and discussion

Table 1 shows the results of the participants' initial experiences with the improved system. In general, students found Linggle highly efficient. It helped them with most of the collocation problems ( $M=5.3$ ). Students also found Linggle easy to use ( $M=5.3$ ) and the syntax commands are easy to learn ( $M=5.2$ ). The findings are consistent with the previous Linggle study (Lai & Chang, 2020).

Table 1. Questionnaire results on efficiency and usability of the tool

	Item	AVG
1	Linggle helped me with most of the collocation problems.	5.3
2	Linggle quickly helped me solve collocation problems.	5.1
3	I find it easy to use Linggle to look up collocations.	5.3
4	The Linggle syntax commands are easy to learn.	5.2

Table 2 shows the participants' perceptions of the new interface and the information the system provided, including the collocation information and the example sentences for each collocation. The students were pleased with the interface, which was clear, intuitive, and easy to use. They also believed that the enhanced version offered a reasonable number of example sentences ( $M=4.5$ ) and these sentences were not too hard ( $M=4.7$ ). Observing corpus examples is never easy. Learners often experienced some frustration when observing corpus examples (Yoon, 2016). In this project, the example sentences were selected by the classifier we trained. The dictionary-like sentences were easier for the EFL learners to comprehend and would reduce learners' cognitive load.

Table 2. Questionnaire results on interface and richness of example sentences

	Item	AVG
1	Linggle's interface is user-friendly.	5.4
2	I like how Linggle displays its search results.	5.2
3	Linggle offers a lot of information on patterns and collocations.	5.2
4	The examples that Linggle gives are not too hard or too easy.	4.7
5	Linggle offers a reasonable number of example sentences.	4.5

### 4. Conclusion

This paper reported the improvements made to the collocation search engine Linggle. We used the machine learning method and trained a classifier to help select good example sentences automatically. Initial results were quite positive. We

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also enhanced the interface to avoid overwhelming users. If a corpus tool is well-designed, it can be very beneficial. Our enhanced version will provide EFL learners a quick way to obtain collocation information.

## 5. Acknowledgements

The project was sponsored by the Ministry of Science and Technology, Taiwan (MOST 110-2637-H-141-001).

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# Edutainment: assessing students' perceptions of Kahoot! as a review tool in French L2 classes

Oneil N. Madden<sup>1</sup>

**Abstract.** Gamification is a method used to engage and motivate students virtually during the coronavirus pandemic. This paper reports on the use of Kahoot! as a review tool in French as a foreign language (L2) classes at Northern Caribbean University (NCU), Jamaica, as a means of formative assessment. Using the exploratory approach, it seeks to highlight students' perceptions of this platform to enhance teaching and learning. Twenty-one students of both genders between the ages of 18 and 35 responded to a post questionnaire, after participating in two or more games of Kahoot!. Data was also collected through semi-structured interviews and observations recorded by the instructor. Preliminary findings show that Kahoot! helps most students (95%) to improve their French, in terms of learning and/or reinforcing new vocabulary or previously taught concepts, as well as pronunciation. All the participants highlighted that Kahoot! is fun and interactive, and playing the game serves as a motivation for them to revise their already acquired knowledge. However, the countdown feature can provoke stress and affect the thought process.

**Keywords:** Kahoot!, gamification, perception, French as a foreign language, Jamaica.

## 1. Introduction

In response to the coronavirus pandemic, “many countries around the world closed schools, colleges and universities to halt the spread of the virus” (OECD, 2020, p. 2). Consequently, many systems adopted virtual learning at an unprecedented level by exploiting technological devices and the Internet. However, despite

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**How to cite this article:** Madden, O. N. (2022). Edutainment: assessing students' perceptions of Kahoot! as a review tool in French L2 classes. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 240-245). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1465>

the subsequent return of face-to-face classes in many universities worldwide, most Jamaican institutions have maintained online classes. As both students and instructors must adjust to new and sudden pedagogical dynamics, many educators, including L2 instructors, have to find creative and innovative ways to diversify their classes so that students can be engaged and motivated to learn (Madden, 2022).

From a psychological perspective, motivation is a necessary personality factor that L2 learners need to achieve meaningful production. Gardner (2010) posits that a motivated student engages in the relevant activities, expends efforts, persists in activities, attends to tasks, shows desire to achieve the objective, and enjoys the activities. Gamification is one approach that fosters that motivation. Kapp (2012) defines gamification as “using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems” (p. 10). Manzano-León et al. (2021) highlight that gamification fosters greater motivation, academic performance, and commitment in students while Buckley and Doyle (2016) indicate that gamification reinforces extrinsic motivation and improves intrinsic motivation.

## 2. Kahoot!

Kahoot! is a free game-based digital platform, which was developed in Norway (<https://kahoot.com/>). Research shows that Kahoot! is a platform that motivates and activates students' learning and engagement (Wang & Lieberoth, 2016) because it can test their knowledge, reiterate important concepts, and help them retain information. Plump and LaRosa (2017) add that Kahoot! enhances classroom dynamics, as the game gives students immediate feedback on their performance, and instructors can design and incorporate teaching activities to address any weaknesses in students' responses to the questions.

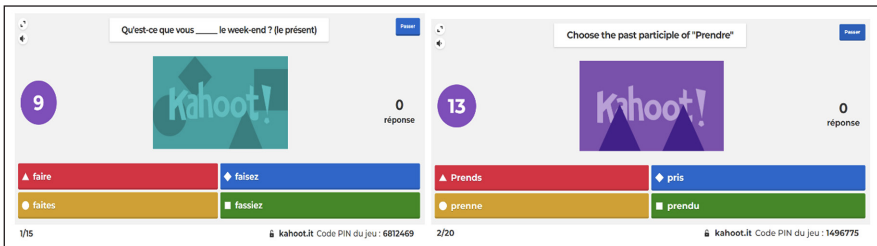
Thousands of Kahoot! games have been played across countries and institutions, and numerous research conducted; however, there is a dearth of documented experiences in the Jamaican context. Wanliss (2021), a teacher-trainer of French, recorded testimonies of Jamaican pre-service L2 teachers, who stated that Kahoot! was useful during their virtual teaching practicum. This scarcity of local data will benefit from this paper, which reports on the use of Kahoot! as a review tool in French L2 classes in a higher education context. Using the exploratory approach, the researcher seeks to ascertain students' perceptions on the use of Kahoot! as well as some benefits of gamification in the L2 classroom.

### 3. Method

This paper reports on the use of Kahoot! in French L2 classes at NCU, Jamaica<sup>2</sup> throughout the academic year 2021/2022, among undergraduate learners (N=21), both male (N=7) and female (N=14), between the ages of 18 and 35 years. The students were from different humanities and hospitality majors and followed beginners or intermediate French level courses as part of their programme requirements.

During the 15-week semester beginners' course (spring semester), the researcher played three Kahoot! games and four games in the intermediate course at different intervals to review/reinforce unit content. Each game comprised between ten and 20 questions on syntax, vocabulary, idiomatic expressions, and culture or interculturality (see example in Figure 1). The questions were tailored based on the challenges faced by the students during the lessons. After each question-response period, the instructor provided clarity on both the correct and incorrect responses.

Figure 1. Sample of Kahoot! questions



The data collection included semi-structured interviews and observations conducted by the instructor throughout the course (before, during, and after playing Kahoot!). The primary questions surrounded students' linguistic (all skills) and cultural gains after each session. Additionally, a questionnaire was given towards the end of the spring semester, which consisted of eight closed-ended and five open-ended questions. The former questions primarily accounted for demographic data, while the latter focused on ways in which Kahoot! helped to improve their L2 skills, their perception of Kahoot!, and their thoughts on gamification in L2 education.

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2. Thanks to all students from the Beginners 2 and Intermediate 1 and 2 French courses for participating in this study.

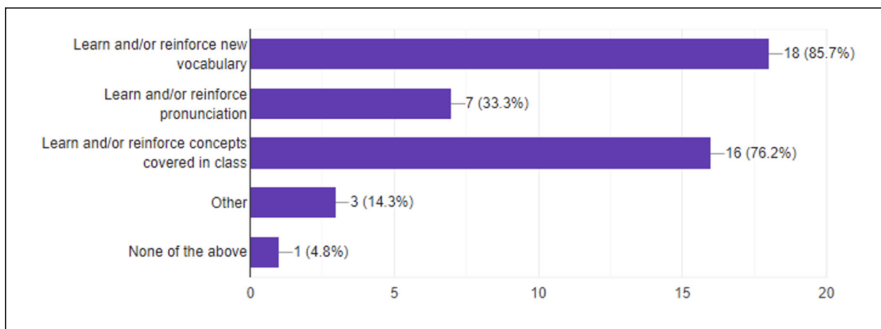
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## 4. Preliminary findings and discussion

In the questionnaire, 72% of the respondents declared that before taking their French course, they had prior knowledge of and exposure to Kahoot!, while 28% had no familiarity with it. Kahoot! was used in other courses to aid revision, and in social and cultural contexts for entertainment as well as competitive purposes.

Concerning the use of Kahoot! to improve students' competence in French, 62% of the participants indicated that the tool helped to improve their level, 33% confirmed that it helped somewhat, while only 5% noted that it did not help at all. The majority of the respondents highlighted that the games played helped them to learn and/or reinforce new vocabulary and pronunciation, as well as previously taught concepts (see [Figure 2](#)).

Figure 2. How Kahoot! improves French L2 competence



An extrapolation of the data from the instructor's semi-structured interviews and observations, as well as students' self-reported gains from the questionnaire, also corroborate the above-mentioned findings (see Excerpt 1, [supplementary materials](#)).

Other advantages highlighted from the different data sources include metacognitive and interpersonal development, as students employ different strategies to respond to the questions, and they display great sportsmanship, encouraging and supporting each other throughout the games. However, some students underscore that the countdown feature can provoke anxiety, while for others, technical and connectivity issues can be a downfall (see Excerpt 2, [supplementary materials](#)).

Data from the questionnaire suggests that the incorporation of games in the L2 classroom creates a fun, interactive, and competitive environment, which makes

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the context not so strict. Additionally, games tend to grab students' attention and motivate them to learn. Competition also encourages some students to revise their notes if they want to be ranked highly in the games. Moreover, the use of games helps students to recap learned content and identify their strengths and weaknesses (see Excerpt 3, [supplementary materials](#)). For these reasons, 86% of the respondents suggested that Kahoot! should be played after each learning unit, while 14% recommended once monthly. Seventy-one percent indicated that getting prior notice of the game would motivate them to revise, while 29% said it would somewhat motivate them.

An initial analysis of the findings supports [Wang and Lieberoth's \(2016\)](#) position that Kahoot! fosters learners' motivation, reinforces already taught concepts, and promotes information retention. Additionally, Kahoot! as gamification in general shifts classroom dynamics ([Plump & LaRosa, 2017](#)) and brings more diversity to an often-monotonous setting. However, in order for gamification to yield such results, the questions have to be carefully designed to prompt students to utilise their metacognitive strategies to produce meaningful output. Additionally, the instructor must spend time to clarify any misconceptions or questions that students may have.

## 5. Conclusions

This study suggests that there is a correlation between gamification and students' motivation and involvement in L2 classes. All the participants in this study reported that gamification is fun and engaging, and 95% of them confirmed that the use of Kahoot! enhanced their French language and cultural skills.

Kahoot! promotes student learning and reinforces the acquisition of new vocabulary, previously taught concepts and grammatical structures, and pronunciation. It also aids in the development of metacognitive and interpersonal skills. However, technical and connectivity issues can arise, and timing plays an important role. Gamification should be carefully designed and executed to yield meaningful output.

## 6. Supplementary materials

<https://research-publishing.box.com/s/grpagqq8socklgfvnzef39fp4561c8qs>

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# Religious beliefs: a barrier to cross-cultural communication in the ClerKing telecollaborative project

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**Abstract.** Globalisation amplifies the need to improve Intercultural Communicative Competences (ICC). However, telecollaborative cross-cultural communication may be affected by different factors such as morals, values, and differences in viewpoints, as observed in numerous European and North American projects. Still, there is a dearth of experiments from the Anglophone Caribbean’s stance. Therefore, this paper seeks to highlight how religious ideologies affect international communication in ClerKing – a Franco-Jamaican telecollaborative project that occurred in different phases over a three-year period with learners of English from Clermont Auvergne University (UCA) and learners of French from Shortwood Teachers’ College (STC) and the University of the West Indies (UWI), Mona. Using the exploratory approach, pre- and post-project questionnaires, learning and reflective journals, and different multimodal exchanges were analysed. Preliminary findings suggest that religion was a major theme highlighted in all phases of the project, leading to challenged communication and somewhat negative perception of the target culture.

**Keywords:** Intercultural communicative competence, religion, telecollaboration, ClerKing, Jamaica.

## 1. Introduction

The need for people to cultivate and demonstrate ICC and global competence is more demanding in this interconnected world. Globally competent people possess the capacity to “examine local, global and intercultural issues, understand

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**How to cite this article:** Madden, O. N. (2022). Religious beliefs: a barrier to cross-cultural communication in the ClerKing telecollaborative project. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 246-251). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1466>

and appreciate different perspectives and world views, interact successfully and respectfully with others, and take responsible action toward sustainability and collective well-being” (OECD, 2018, p. 4). Foreign language educators have used telecollaboration to help learners to develop their cross-cultural skills. In fact, several thousand telecollaborative projects have been implemented over the past two decades but mainly in European and North American contexts. There remains a dearth of perspectives from the Caribbean’s standpoint, including Jamaica, which is relatively new to incorporating telecollaboration in educational curricula. Not many Jamaican students participate in study exchange programmes due to financial constraints or lack of opportunities within their degree programmes. Thus, telecollaboration is a cost-effective way to get students to interact with other cultures.

The literature shows that numerous advantages are associated with telecollaboration, such as improvement in cultural awareness and linguistic competence. However, O’Dowd and Ritter (2006) attribute ‘failed’ communication to four domains: individual, classroom, socio-institutional, and interactional. In addition, Madden and Ashby (2021) note that the heterogeneity of cultures and divergence in cultural perspectives, morals, and values can provoke interactional friction. This happens within a ‘contact zone’ (Pratt, 1991), where cultures meet, clash, and grapple with each other.

Helm (2015) found that participants prefer to focus on ‘safe’ topics, but circumventing conflict in exchanges may, however, falsify the reality of intercultural encounters. In fact, exploring sources of disparity over serious issues, including religious beliefs, can be revelatory, a rich cultural point (O’Dowd, 2011). The aim in exposing students to potential conflict is not for everyone to agree in the end, but for students to understand that otherness exists.

Using the exploratory approach, this paper seeks to share insights on the extent to which religious ideologies affected the outcome in the ClerKing telecollaborative project.

## **2. Method**

ClerKing is a Franco-Jamaican project that spanned over three years (2018-2020) between Applied Foreign Language learners of English from UCA, France, and learners of French from STC and the UWI, Jamaica. French students took the course Open Learning Project and were B2-C1 level on the Common European

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Framework of Reference for Languages, while Jamaican students took the course Conversation French and had an A1-B2 level. There were four phases, ranging from seven to ten weeks, depending on the semester, and 121 participants of mixed genders, between the ages of 18 and 33 participated. Students were paired/grouped based on their profiles submitted ahead of the project, which included linguistic and cultural background, areas of studies, likes and dislikes, gender, age, and place of birth and residence. They discussed different cultural and intercultural topics weekly via different media (videoconferencing platforms, WhatsApp) to improve linguistic, cultural, and intercultural competences. They also completed specific tasks such as learning journals and reflective journals to document their experiences and gained knowledge. [Table 1](#) provides more details into the breakdown of the project.

Table 1. Breakdown of the ClerKing telecollaborative scenario

<b>Language of exchange</b>	In Phases 1-3, the languages were imposed – French for half an hour and English for the other half to facilitate practice. The UWI participants in Phase 4 had an A1/A2 level in French, so they had the option to choose which language to use.
<b>Topics discussed</b>	Getting to know you, geography, historical moments, culture/customs/stereotypes, politics, regional languages, national celebrations, literature, multiculturalism, taboo subjects. The topics were imposed in Phase 1, while participants had a say in choosing two of the topics in Phases 2-4. They also chose which ‘taboo’ topic they wanted to discuss.
<b>Tasks</b>	Final: Choose one of the topics discussed and create a brochure or a YouTube video to share the content learned from discussions with your partner/s.
<b>Communication platforms</b>	WhatsApp was used for text and voice messages in between, while Skype and Zoom were used for longer video conversations.

The data collection includes pre- and post-project questionnaires (see [supplementary materials](#)), journal entries, and the different exchanges had.

### 3. Findings and discussion

Preliminary findings show that religion or religious views played a critical role in determining the overall outcome of the ClerKing project. An extrapolation of data across all phases seems to link students’ morals and values to their religious stance, whether they are practising believers or not. This was observed in their discussions on controversial topics such as same-sex unions, abortion, and Valentine’s Day. Forty-five per cent of Jamaican students referenced the Christian

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Bible, stating that homosexuality is a sin, and those who practise it will have no part in God's kingdom. On the other end, 60% of Clermontois students in their defence indicated that the problem is not about homosexuality; it is just that some people are close-minded. One Jamaican student described the conversation as 'blasphemous' before exiting the *WhatsApp* group chat. Similarly, on the matter of abortion, the same Jamaican participants cited the Bible to justify their stance for being pro-life, by referring to the commandment that says, 'thou shalt not kill'. Conversely, 30% of their Clermontois counterparts spoke of feminism and the right for a woman to do as she pleases with her body. Regarding Valentine's Day, some Jamaican participants made similar pronouncements that they do not celebrate this event because of the alleged view that Saint Valentine was a homosexual. Most of these exchanges were halted because, on the one hand, 80% of the Clermontois students felt that their Jamaican peers were intolerant and unwilling to view intercultural issues from the other person's perspective. On the other hand, 85% Jamaican participants felt like their religious beliefs were being mocked. Efforts were made to address the concerns in a mutual Zoom call but most participants were opposed to this meeting.

In other instances, personal religious schedules affected many of the exchanges. Amid the time difference (six or seven hours, depending on the semester), all the Jamaican participants in Phases 1 and 2 had to go to daily morning devotional exercises, which were part of their university curriculum. Likewise, 75% of them had mid-week religious services at church on the weekend. At times, they would agree to a meeting time with their Clermontois partners, but they either showed up late, cancelled at the last minute, or were absent due to prioritising religious activities over the telecollaborative project.

Sixty per cent of Clermontois participants found it appalling that religious education is integral in most Jamaican schools, given that they are accustomed to *laïcité*. One participant in Phase 3 summed up this idea by saying,

"I learned that religious teaching was important, even going to say prayers in the morning before the school day begins. Being a French atheist, any religious concept is distant to me, so when I am told that you can be taught religious principles at school, it is always surprising to me".

The findings indicate that religious ideologies contributed to failed communication in telecollaboration, touching the individual, socio-institutional, and interactional dimensions described by O'Dowd and Ritter (2006). Participants operated in their 'contact zones' (Pratt, 1991) on intercultural issues, which led to intercultural

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friction (Madden & Ashby, 2021) due to a failure to understand and appreciate others' perspectives and engage in open interactions (OECD, 2018).

## 4. Conclusions

This study suggests that morals and values, which are influenced by religious ideas, can lead to a lack of openness in cross-cultural communication. While this may lead to challenged communication, it is necessary for curricula to continue to facilitate intercultural exchanges, whether physically or virtually, as the development of global competence requires cultures to interact with each other to cultivate certain skills such as tolerance and curiosity.

## 5. Acknowledgements

Special thanks to Open Learning Project students from UCA, and French students and staff from the Department of Modern Languages and Literatures from the UWI, Mona and STC for their participation.

## 6. Supplementary materials

<https://research-publishing.box.com/s/s86f2k02z1hxd497welqfxbmrytfrt21>

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# A telecollaborative study of university students in Spain and Sri Lanka using the Soqql video app

Marni Manegre<sup>1</sup> and Piyumi Udeshinee<sup>2</sup>

**Abstract.** This study addresses interculturality and Intercultural Competence (IC) by connecting university students in Spain and Sri Lanka through the use of the Soqql app, an education-based video app. The students were asked to create five videos independently using English as a lingua franca and upload each video to the app related to the assigned tasks. The goal of this study is to determine whether creating videos increases the IC of the students and whether the video creation activities enhance the students' English as a Foreign Language (EFL) listening and speaking skills. The students were given a pre-questionnaire at the onset and post-questionnaire at the conclusion of this study. The results show that the students increased in their cultural knowledge from the pre- to post-questionnaire. Additionally, the students reported that their Foreign Languages (FL) skills increased, and they generally enjoyed participating in this study.

**Keywords:** virtual exchange, telecollaboration, mobile assisted language learning, social media language learning.

## 1. Introduction

Interculturality, when introduced in a classroom, often relies on the biased and subjective comparisons of different cultures (Li & Dervin, 2018). When interculturality is introduced, students not only learn what is culturally appropriate, despite any biases, but they also develop an understanding of how to use language to build relationships across cultures (Belz, 2003; Ferreira, Bezanilla, & Elexpuru, 2018; Kramer Moeller & Nugent, 2014). In addition to interculturality, which is a comparison of cultures, IC is often introduced in

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**How to cite this article:** Manegre, M., & Udeshinee, P. (2022). A telecollaborative study of university students in Spain and Sri Lanka using the Soqql video app. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 252-257). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1467>

classes to teach students how to have meaningful interactions with those from different backgrounds. There are several approaches to how teachers introduce online communication in a classroom with the goal of increasing IC (O'Dowd, 2018). This study incorporates Deardorff's (2006) model of IC and aims at answering what it means to successfully communicate and interact with those from different cultures (Deardorff, 2006, 2011). In this model, there are three main components that can be assessed, which are the *attitudes* of the individuals, which includes respect, openness, and curiosity to discover, *knowledge and comprehension*, which includes cultural self-awareness, cultural knowledge, and sociolinguistic awareness, and finally *skills*, which is the ability to observe, listen, and evaluate. The current study focuses primarily on assessing the knowledge and comprehension, along with the skills that the students acquired in a telecollaborative virtual exchange that connected students from the Catalan region of Spain with students in Sri Lanka. Additionally, the attitudes of the students were assessed, but mainly regarding the enjoyability of the project. Since students between Spain and Sri Lanka are not often paired in a virtual exchange, we were interested in observing how the students advanced in their knowledge of the foreign culture, the advancement of the students' skills in using English as a FL, and their overall attitudes from participating in this project, such as their level of enjoyment. Thus, the following research questions were asked.

- Will using the Soqle video application to create short videos as part of this telecollaboration project increase the cultural knowledge and IC of the participating students?
- Will the participation in this project by creating and watching videos of their peers and partners in the foreign country increase their EFL speaking and listening skills?
- Will the students enjoy creating videos in English and participating in the project?

## 2. Method

### 2.1. Participants

There were 56 students enrolled in the English degree program at a university in the Catalan region of Spain and 54 students enrolled in the business English program

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at a university in Sri Lanka who participated in this study. All the participating students have a level of English between A2 and C2 on the Common European Framework of Reference for Languages scale.

## **2.2. Materials**

This study employed the use of the Soqql. Soqql is an education application that allows students to create videos as part of their homework assignments. This app is secure, and the students and teachers require a class code to upload and watch the videos. The app was built for asynchronous learning, as there is no live stream. Videos are uploaded to the app, and it functions like other social media apps allowing peer-based learning, since the students can like their peers' videos and leave comments.

## **2.3. Procedure**

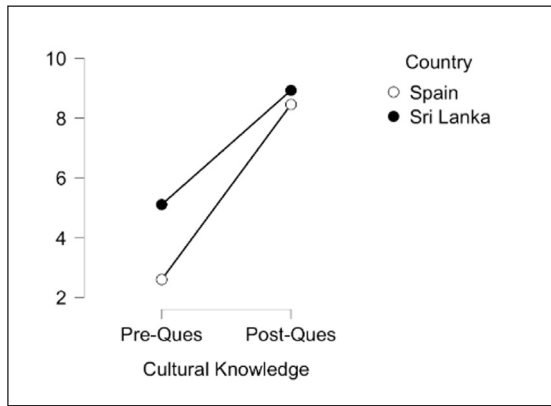
The students filled out a pre-questionnaire that assessed their knowledge of the foreign country they would be working with. Over the course of the autumn semester in 2021, the students uploaded five videos based on the assigned theme. They were required to watch and comment on the other videos with instructions on how to give valuable feedback. The themes for the videos were as follows: food, neighborhood, music, hobbies/sports, animals, and pets. At the end of the semester, the students filled out a post-questionnaire detailing their perceptions of language improvement, their knowledge of the foreign country, and their level of enjoyment.

## **3. Results**

When analyzing the students' knowledge of the foreign countries collectively, from the pre-questionnaire ( $M=3.83$ ,  $SD=2.52$ ) to the post-questionnaire ( $M=8.68$ ,  $SD=2.10$ ), the analysis shows that the results are significant,  $t(110)=-17.34$ ,  $p<.001$ . We then examined the differences by each university using an ANOVA and found that there was a difference between the students at the different universities  $F(1)=22.32$ ,  $p<.001$ .

As can be seen in [Figure 1](#) below, the students in Spain claimed to know less about their counterparts in Sri Lanka than their partners claimed to know of Spain. However, the scores of the students at both universities were similar when the study concluded.

Figure 1. Cultural knowledge of the students in Spain and Sri Lanka from the pre- to post-questionnaire



To analyze the perceptions of the students' overall FL skills, FL listening skills, and FL speaking skills, chi-square goodness of fit tests were conducted to determine whether the skills were equal between the Likert options that ranged from strongly agree (5) to strongly disagree (1). The proportions differed for each of these variables, as can be seen in [Table 1](#) below. The students generally reported that they agreed ( $M > 3$ ) this project increased their overall FL skills, speaking skills, and listening skills, as can be seen in [Table 2](#) below.

Table 1. Chi-square goodness of fit tests for language skills

Location	Skills	$\chi^2$	df	p
Spain	FL General	64.000	4	<.001
Spain	FL Listening	39.714	4	<.001
Spain	FL Speaking	37.929	4	<.001
Sri Lanka	FL General	52.296	4	<.001
Sri Lanka	FL Listening	49.889	4	<.001
Sri Lanka	FL Speaking	30.630	4	<.001
Both	FL General	109.545	4	<.001
Both	FL Listening	89.182	4	<.001
Both	FL Speaking	65.182	4	<.001

Table 2. Descriptive statistics on perceptions of skills

	Increased General FL	Increased Listening	Increased Speaking
Mean	3.865	3.919	3.748
SD	0.814	0.811	0.879

Additionally, a chi-square goodness of fit test was also completed to determine whether the students' reported enjoyment when participating in this project was equal on the Likert scale. The proportions also differed for each variable, as can be seen in Table 3 below. The students generally reported that they enjoyed participating in this project ( $M > 3$ ), as can be seen in Table 4 below.

Table 3. Chi-square goodness of fit tests for enjoyment

Location	Perceived Enjoyment	$\chi^2$	df	p
Spain	Enjoyed Participating	54.893	4	<.001
Sri Lanka	Enjoyed Participating	102.852	4	<.001
Both	Enjoyed Participating	148.727	4	<.001

Table 4. Descriptive statistics on perceptions of enjoyment

	Spain	Sri Lanka	Both
Mean	4.339	4.618	4.477
SD	0.837	0.757	0.870

## 4. Conclusions

While the students at the conclusion of the study generally shared the same amount of knowledge of the other culture, at the onset of the study, the students in Spain appeared to know less of Sri Lankan culture than their partners knew of Spain. However, the results show an increase in cultural knowledge from the pre-questionnaire to the post-questionnaire for both schools and this increase is significant. Additionally, the students from both universities reported that they generally felt that all three skills have increased due to their creation of videos in English and watching the videos of their classmates and foreign peers. Finally, the students generally agreed that they enjoyed participating in this project. As the findings support our research questions, we consider this collaboration project to be a success. Nevertheless, most of the data collected was based on an analysis of student perceptions, that is, whether they feel their skills have improved.

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# Emotional and social engagement of teenager and young adult students of EFL using MIM (Mobile Instant Messaging)

Dunia Martínez<sup>1</sup> and Christine Appel<sup>2</sup>

**Abstract.** Mobile Instant Messaging (MIM) applications have come into focus as potential tools to improve English language instruction, and teachers can engage more students from different backgrounds in English as a Foreign Language (EFL) classes thanks to MIM apps' distinctive features, like WhatsApp. Most of the reported studies on the use of WhatsApp in the teaching of foreign languages were performed in university or adult learning environments. The present study explores how social and emotional engagement manifest themselves in a popular instant messaging application group (WhatsApp) used by teenagers learning EFL. A focus group, a Likert scale survey, and a transcript of the WhatsApp chat were the three main sources from which data was gathered. Members' interaction records were retrieved and inductive thematic analysis was used to examine them. These findings suggest that WhatsApp provided communicative opportunities to all students, including those who did not fully engage. However, further research with a larger number of students in different contexts is necessary.

**Keywords:** engagement, mobile instant messaging, WhatsApp.

## 1. Introduction

Technological development in mobile technology has been advancing constantly, improving access to information and communication almost instantly and anywhere. With the development of mobile technology, the opportunities for

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**How to cite this article:** Martínez, D., & Appel, C. (2022). Emotional and social engagement of teenager and young adult students of EFL using MIM (Mobile Instant Messaging). In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 258-265). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1468>

interaction among the different participants in the teaching-learning process are expanding (López-Hernández & Silva-Pérez, 2016).

Young students today regularly use smartphones, social media, and instant messaging. Furthermore, according to recent studies (Rideout & Robb, 2018), teens prefer texting to talking, suggesting that MIM is their main form of communication. As a result of their widespread usage of mobile devices, this generation has developed a technological aptitude and has even begun networking and sharing via social media and mobile applications. MIM applications have therefore been identified as potential tools for enhancing foreign language learning (Andújar, 2016; Tang & Hew, 2017).

Although young people use MIM primarily to communicate, Tang and Hew (2017) claim that “we lack a comprehensive understanding of how MIM applications are used for teaching and learning” (p. 87). Furthermore, language teachers are constantly attempting to connect their students to school and learning because they recognise the importance of student engagement in academic achievement. When students are working on a task individually or in groups, they may react differently: some may be completely focused on the task, while others may be on and off. Engagement is a condition of increased attention and involvement in which participation is manifested not only cognitively but also socially, behaviourally, and emotionally (Christenson, Reschly, & Wylie, 2012). Therefore, learner engagement is essential for learning to be successful.

This study explores how social and emotional engagement manifest themselves in a popular MIM application, WhatsApp. It aims to gain a better understanding of how teenage students communicate with one another and the teacher in a WhatsApp group. This study focuses on emotional and social engagement as social engagement is inextricably linked to emotional engagement, particularly among child and adolescent learners (Philp, Oliver, & Mackey, 2008).

## 2. Theoretical framework

Student engagement has gained much attention over the last several decades as instructional methods have shifted toward student-centred, constructivist approaches (Wright, 2011). This study draws on a student engagement model by Bowden, Tickle, and Naumann (2019) which incorporates four dimensions: behavioural, emotional, social, and cognitive engagement (Figure 1), and presents results related to the emotional and social dimensions.

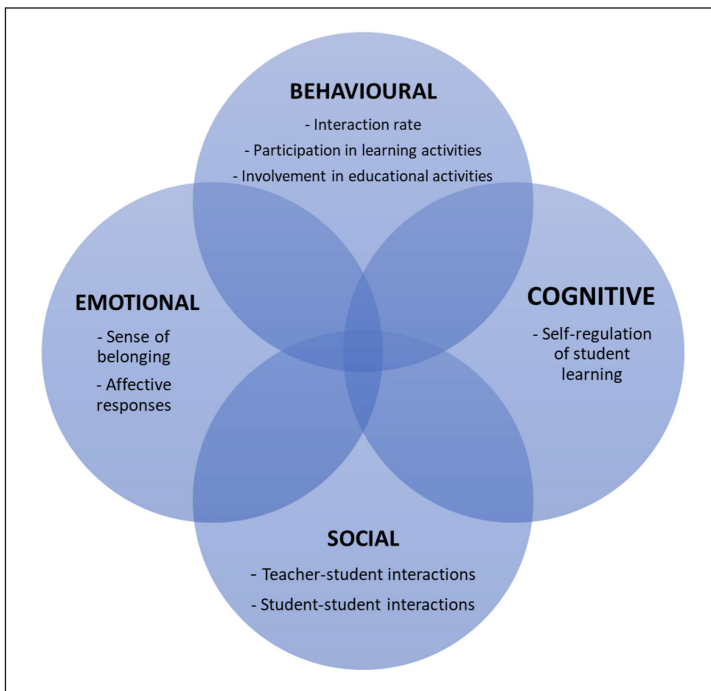
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The social component of engagement should be considered an essential element of adolescent and young adult engagement (Bowden et al., 2019). It takes into account the connections that students make with their peers, faculty, and other key players in their educational process. Peer influence becomes more noticeable during adolescence, as teenagers spend more time with their peers and develop independence from their parents (Pekrun & Linnenbrink-Garcia, 2012).

Interest, boredom, happiness, anxiety, and other affective states are all examples of emotional engagement and can all have an impact on how involved students are in their studies. In a nutshell, emotional engagement refers to both positive and negative responses to classmates and teachers. It is thought to have an effect on the student's motivation to complete the assigned tasks.

Figure 1. The four dimensions of student engagement (based on Bowden et al., 2019)



This study aims to gain a better understanding of how teenage and young adult students communicate with one another and their teacher in an EFL class WhatsApp group. With this objective, we pose the following research question: how do social and emotional engagement manifest itself in these WhatsApp group interactions?

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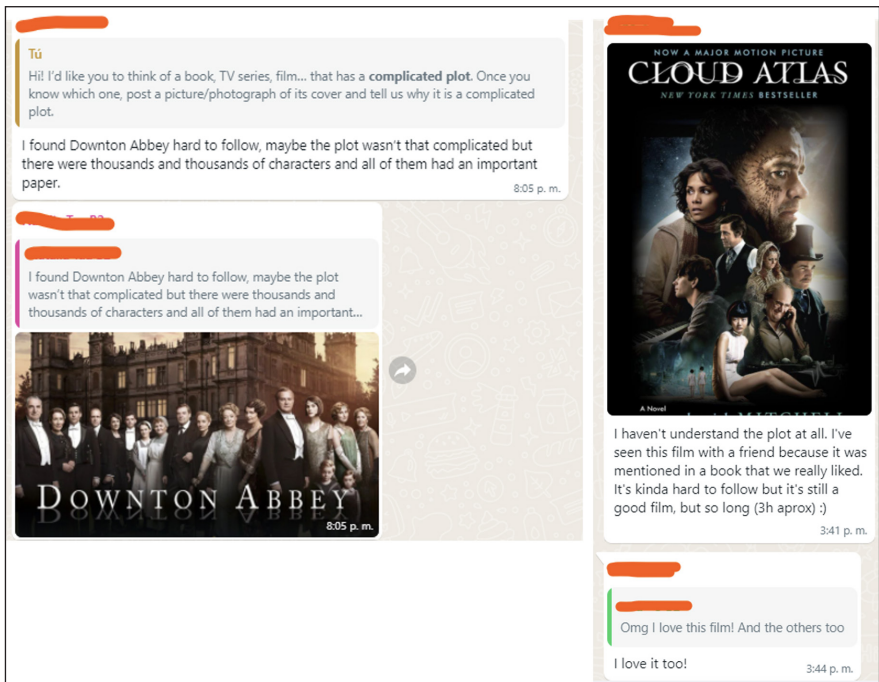
### 3. Method

This study was conducted in a real classroom environment in which WhatsApp was incorporated into natural educational practices. Students used the MIM service via the mobile app on their smartphones, and there were no mandates or constraints on how participants should use the app.

The 14 participants were teenage students, aged 13-17, enrolled in a B2 EFL course in a language school in Catalonia (2021-2022 school year). They were all studying EFL as an extracurricular activity and are bilingual in Catalan/Spanish. The class met twice a week for one and a half hour sessions.

The teacher was part of the WhatsApp group, and participation in the study was voluntary and did not affect grades. Students were encouraged to do different activities such as speaking tasks, both individually and in pairs, short writing exercises (Figure 2), and use the WhatsApp group in any way that might help them.

Figure 2. Example of writing task



Data<sup>3</sup> was collected by means of a focus group, a Likert scale survey, and a transcript of the WhatsApp group (Table 1).

Table 1. Data collected

Dimensions of Engagement	Measuring how it happened	Type of Analysis	Data Sources
SOCIAL	<ul style="list-style-type: none"> <li>• Teacher-student interactions</li> <li>• Student-student interactions</li> <li>• Creation and maintenance of relationships during the study</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative</li> <li>• (Inductive thematic analysis)</li> <li>• Quantitative</li> </ul>	<ul style="list-style-type: none"> <li>• Focus group</li> <li>• WhatsApp group chat: how they interact, when, how often, etc.</li> <li>• Number of messages sent</li> </ul>
EMOTIONAL	<ul style="list-style-type: none"> <li>• Emotional reactions</li> <li>• Sense of belonging</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative</li> <li>• (Inductive thematic analysis)</li> <li>• Quantitative</li> </ul>	<ul style="list-style-type: none"> <li>• Focus group</li> <li>• Questionnaire</li> <li>• WhatsApp group chat: number of emojis and words that express any emotion</li> </ul>

## 4. Results and discussion

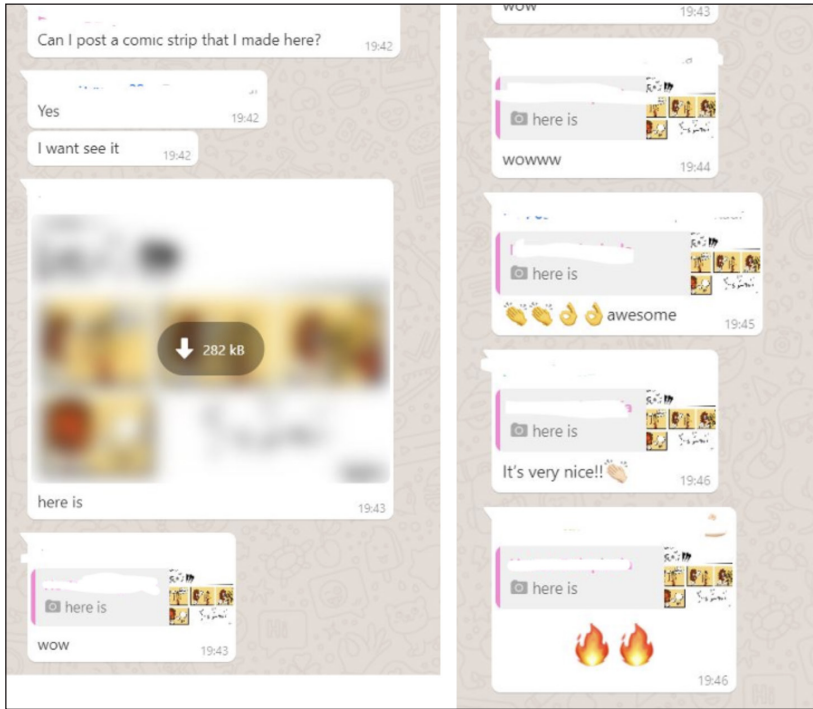
### 4.1. Social engagement

The analysis of the WhatsApp group transcript revealed social phatic expressions like greetings (73 messages), holiday wishes (28 messages), and birthday wishes (21 messages), which helped increase students’ sense of friendliness.

There was also self-disclosure of personal information in the chat, which helped them get to know each other more, and expressions of appreciation (Figure 3). Students reported that the WhatsApp group was useful for communicating and socialising with their classmates, especially when in hybrid lessons.

3. Ethical issues and parental permission: as all students are underage, all participants and their parents signed consent forms for their participation in the study.

Figure 3. Students share personal information and expressions of appreciation from their classmates



#### 4.2. Emotional engagement

A total of 284 emojis were used in the WhatsApp group out of 846 messages sent during a school year (September-June). The convenient use of emojis and GIFs also helped with emotional expression and added some fun to the conversation.

Students in general reported that they had the feeling they had learned and improved their speaking and writing skills, although four of them mentioned that they did not find much difference between using WhatsApp and writing on a piece of paper. They saw these tasks as the same, using a different tool.

Thirteen out of 14 students sent their speaking audio recordings directly to their teacher, who gave them oral feedback using a voice-recorded message. Students reported during the focus group that they felt less embarrassed when sending their speaking tasks using WhatsApp directly to the teacher because they were on their own and nobody in class was listening. Some stated they did not like

how their voice sounded; others reported that they did not want their classmates to notice if they made mistakes. Contrary to what some studies show (Han & Keskin, 2016), WhatsApp does not always reduce anxiety when speaking.

According to the focus group discussion and the results of the surveys, the WhatsApp group helped students create a sense of group and connectivity and improved awareness of peer presence. The teacher's participation in the group and her attempt to use this application in an academic setting were well-received by the students.

## 5. Conclusions

The present study provided an insight into how social and emotional engagement develops in an EFL for young learners class WhatsApp group. The WhatsApp group established a friendly and interactive environment, and students had a strong sense of belonging within the community. WhatsApp special features helped promote social interaction and allowed students to share positive and negative emotions through emojis and GIFs.

WhatsApp provided all students, including those who did not fully engage, with communicative opportunities. However, further research with a larger number of students and in different contexts is needed.

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# Expanding design skills for language teachers: a corpus-based web application for ‘language for work’ content creation in Italian L2

Elena Michellini<sup>1</sup>

**Abstract.** Many adult migrants lacking L2 linguistic autonomy cannot afford the time to master host countries’ languages before providing for their basic needs. Thus, second language training that focuses on occupational integration is at times more urgent than a more generally social one, as the European ‘language for work’ approach suggests. Given the shortage of both support sector experts in Italian L2 classes and an appropriate variety of teaching materials for beginners, this paper introduces a PhD work-in-progress project proposing an IT procedure which enables language teachers to collaboratively design specialised multimedia content for beginners, thus enhancing work-related second language development. The article discusses the results of some preliminary surveys and argues the importance of the use of technology when expanding teachers’ design skills.

**Keywords:** ‘language for work’, wikis, collaborative knowledge creation, teacher training, specialised corpora.

## 1. A ‘language for work’

European policies require migrants to demonstrate their proficiency in host country languages before they may participate in all aspects of society. Yet many adult migrants lacking L2 linguistic autonomy cannot take the time to master them before providing for their basic needs. Obstacles to professional integration can have a major impact both on the status of the individual, and on the quality of the socio-economic tissue of the host community.

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**How to cite this article:** Michellini, E. (2022). Expanding design skills for language teachers: a corpus-based web application for ‘language for work’ content creation in Italian L2. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 266-272). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1469>

The ‘language for work’ approach<sup>2</sup> promoted by the European Centre for Modern Languages of the Council of Europe (Beacco, Krumm, Little, & Thalgott, 2017; Braddell & Grünhage-Monetti, 2018), proposes to develop language skills and professional competence at the same time. This methodology has had no adequate response in Italy, even if the country is dealing with stable migratory flows (Centro Studi e Ricerche IDOS, 2019). At the institutional level, the country lacks specific courses for migrants wishing to enter the workforce, an appropriate variety of teaching materials for beginners, and experts supporting language teachers (Michelini, 2020).

Therefore, language teachers struggle to find specific teaching aids. In the focus group and surveys conducted for the AMIF<sup>3</sup> project *La lingua italiana per l'integrazione e per il lavoro*, all Italian L2 teachers reported difficulty in finding both beginner-specific teaching materials and specialised content which is reliable and responds to work-related needs (Cognigni, Michelini, & Vitrone, 2022, pp. 80-93).

With the shortage of both sector experts and an appropriate variety of teaching materials for beginners, the objective of this project is to enable language teachers to create work-related teaching content. Awaiting reorganisation from the Italian government training scheme aimed at adult migrants, the idea is to enable teachers to undertake this mode in their educational institutions, hence improving beginners’ likelihood of access to work.

## 2. Prototype and procedure

To identify the most strategic economic sector in Italy, statistical research was conducted, the chosen realm being catering (Michelini, 2020). The focus was placed on an A2 CEFR<sup>4</sup> level audience, a wide group who relies on a limited number of sector-specific training aids (Cognigni et al., 2022, pp. 80-93). Hence, a web application and an IT procedure were introduced to enable language teachers to collaboratively design specialised multimedia teaching content, applicable as *the most reliable* in relation to the work context.

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2. European experiences on LanguageforWork at <https://languageforwork.ecml.at/>

3. Asylum, Migration and Integration Fund.

4. Common European Framework of Reference for Languages.

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The IT prototype for content creation consists of different IT environments (Figure 1), such as a web application, a wiki<sup>5</sup> aimed for collaborative implementation, a storage space for multimedia teaching items, and potential future training. Furthermore, a sector-specific A2 level syllabus as training model and wiki's interface is needed, as well as a tailor-made specialised corpus – *RISTO* – and a collection of specialised multimedia material.

Figure 1. IT prototype structure



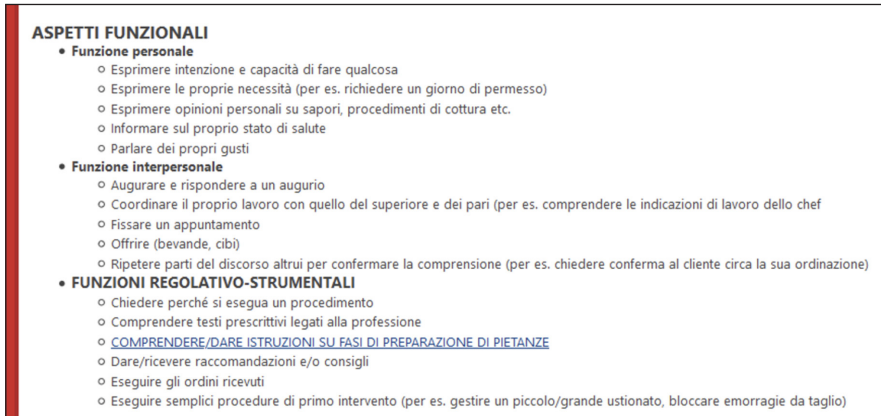
The wiki application was created in PBWorks<sup>6</sup>. Its interface shows the syllabus with its typical catering communicative acts – the necessary learning objectives (Figure 2). It enables teachers to implement entries of the virtual syllabus picking elements to be processed from a multimedia collection – which stores previously selected multimedia items – or from outside of it, thus enriching the collection and the corpus with new context-related material. Thanks to teachers' skills, content can be refined through the specialised corpus, then adapted to meet learners' language levels, and finally, redeposited within the digital syllabus-wiki entry, ready to deepen a precise learning objective.

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5. A wiki is a collaborative website which allows authors to edit and store information in a shared environment using a browser interface (Cantoni & Tardini, 2008, p. 31).

6. PBworks. (<https://www.pbworks.com/>).

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Figure 2. Wiki's interface<sup>7</sup>

Teachers can store various multimedia resources in each syllabus-wiki entry (Figure 3). These could be portions of written language, images, audio, files in various formats, external links, and videos (Figure 4), which are particularly valuable as a context for simulation, preparatory to real practice.

Figure 3. Wiki's resources<sup>8</sup>

7. Excerpt of the wiki's interface showing virtual training objectives to be implemented.

8. Excerpt of multimedia resources provided in each wiki entry.

Figure 4. Videos



Multimedia teaching items are designed to meet basic training needs, supplementing traditional paper-based teaching aids. Moreover, a complete training course using only the application is imaginable as a stand-alone digital textbook. In this regard, students report a positive reception to the use of wikis for L2 learning and their participation in courses significantly increases (Sánchez-Gómez, Pinto-Llorente & García-Peñalvo, 2017).

## 2.1. *RISTO* corpus

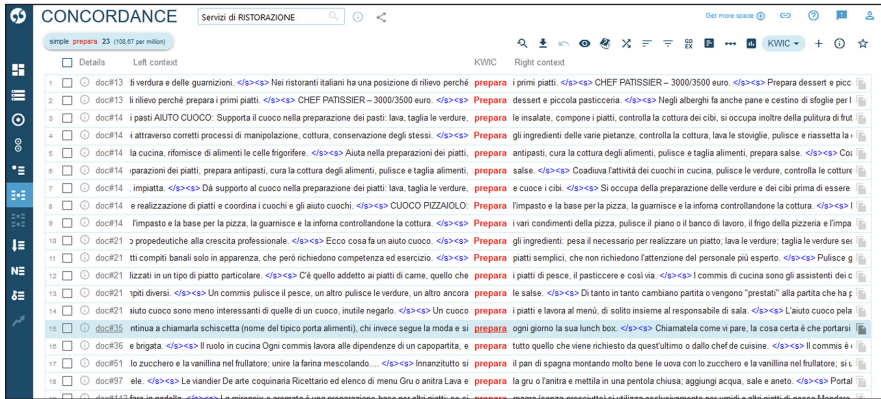
Tailor-made in Sketch Engine<sup>9</sup>, the specialised corpus *RISTO* represents the language of catering. BootCat<sup>10</sup> was added for the semi-automatic retrieval of texts from the web. Currently, it contains about 350 texts and is continually expanding. Its focus is on researchers of specialised languages and their examination of communicative productions “in their social use” (Pietrandrea, 2012, p. 272). In addition, teachers can benefit from corpus resources to improve pedagogical practice, and when designing data-intensive teaching activities (Römer, 2011).

*RISTO* compensates for teachers’ limited specialised knowledge, enabling both searches and checking of specialised linguistic models, and helps teachers create portions of written language useful for various educational purposes. In the absence of a sector expert, teachers are brought closer to information accuracy and trustworthy introductory professional information is provided (Figure 5).

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9. Sketch Engine. (<https://www.sketchengine.eu/>).

10. BootCat. (<https://bootcat.dipintra.it/>).

Figure 5. Concordance in *RISTO*<sup>11</sup>

## 2.2. Technology, collaboration, and teacher's skills

A preliminary survey was carried out through close and open-ended questions in Google Forms during a teacher ‘language for work’ training course in digital environment within the AMIF project. A sample of 44 respondents of teachers and teachers in training provided the analysed data. Regarding the corpus, 88.6% of beginner-user respondents<sup>12</sup> would use it again ‘to compensate for limited domain knowledge’ or simply ‘to find good examples of specialised language’. Asked about their main needs in creating teaching materials, the majority emphasised ‘finding textual content’, immediately followed by ‘finding audio-visual content’.

In this collaborative project – taking its cue from *constructivism* (Jonassen, 1994), numerous teachers can contribute, intervening in the creation phase, relying on the expertise of other members, to the benefit of time and quality of the final product. In this regard, 95.5% of the sample rated the co-construction of ‘language for work’ teaching activities in the digital environment ‘very positively’. Finally, 97.7% declared their interest in repeating a course focused on the collaborative creation of multimedia teaching materials, thus attesting to a growing interest in the use of technology in design and classroom training.

11. Excerpt of a concordance in *RISTO* corpus.

12. The sample received training and tried the tool during the course.

### 3. Conclusions

In this project, technology has been adopted to exploit the advantages of multimedia use in future language training. As preliminary data suggest, specialised teaching content design can happen in an IT collaborative environment, utilising the teaching teams' competence and the impact of technology on educational design. With the study still ongoing, definitive results are yet to be reached and final surveys need to be conducted. However, preliminary results demonstrate the strength of the content creation method and a first digital prototype for adult migrant's work-focused training has been created. Moreover, surveys confirm that IT brings significant advantages in strengthening teachers' design skills, as well as facilitating the sharing of common knowledge and expertise. Finally, this model can easily be replicated for other professions and language levels.

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# Self-regulated listening experience with smart captioning

Maryam Sadat Mirzaei<sup>1</sup> and Kourosh Meshgi<sup>2</sup>

**Abstract.** This article introduces self-regulation features with Partial and Synchronized Caption (PSC) for practicing listening skills and fostering self-paced and autonomous learning. PSC generates a partial caption by focusing on acoustically and lexically difficult words and synchronizes each word's appearance with the speaker's speech. The aim is to reduce textual density in the caption and encourage more listening than reading. Given that difficulty translates differently for individual learners, we created a user-friendly interface that allows a more individualized experience with our generated caption. We collected the user-configuration log data of 33 intermediate English learners to analyze learner behavior during self-paced practice, along with the comprehension scores of the subsequent tests and learner feedback. The data showed differences in learners' strategies with a relative tendency to reduce their reliance on captions. Self-paced practice was received positively by most but not all learners, indicating the importance of individual differences in self-regulated listening.

**Keywords:** smart captioning, L2 listening, self-regulated learning, listening difficulties.

## 1. Introduction

In the sphere of second language acquisition, technologies have changed the way we train and develop skills. However, technologies for teaching and learning listening skills have been limited for many years to the use of captions and multimedia controllers (Gass, Winke, Isbell, & Ahn, 2019). Numerous research

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**How to cite this article:** Mirzaei, M. S., & Meshgi, K. (2022). Self-regulated listening experience with smart captioning. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 273-278). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1470>

studies have been conducted on the benefits of captions in classrooms, such as increased comprehension and vocabulary acquisition (Fievez, Perez, Cornillie, & Desmet, 2020), but studies also indicate that captions could promote reading over listening with increasing reliance on the text (Leveridge & Yang, 2013). Captions also ignore the requirements of individual learners by providing full text to everyone, regardless of level. Therefore, there is a need to open a window onto the development of contemporary tools for listening and pedagogy with particular attention to different learners' needs.

In this context, self-directed learning plays a critical role. It emphasizes that individuals take the initiative in their learning process by diagnosing their needs, adapting the appropriate learning strategies, and evaluating learning outcomes (Knowles, 1975). In the case of listening, learners are dealing with fleeting speech and need to process the input quickly before the next piece of information is received. Putting the control of listening input in the hands of the listener will allow for self-paced learning, which personalizes the learning practice, supports the self-regulatory processes (Kitsantas & Dabbagh, 2011), fosters the sense of agency, motivation, and positive learning experience (McBride, 2011), reduces cognitive overload (Ozcelik, Van den Branden, & Van Steendam, 2019), and improves information processing and performance (Roussel, 2011).

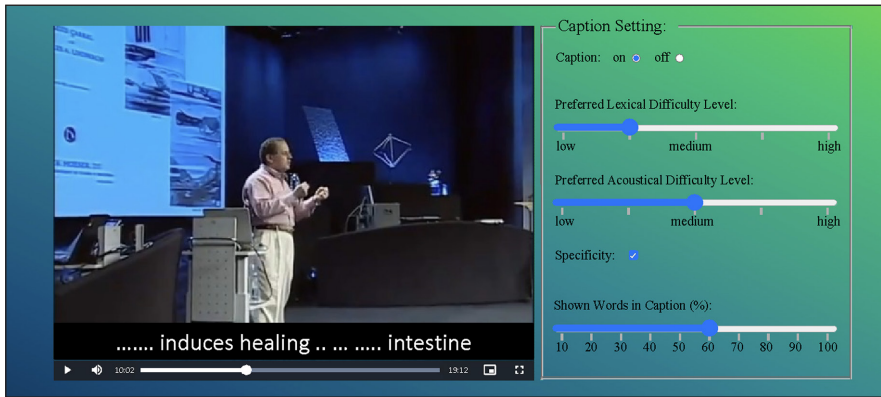
Learning from the ample research available on the L2 listening, with a particular focus on the individual learner's strengths and weaknesses, we introduce PSC with enhanced self-regulating features that allow for generating captions for different language learners. We investigate how learners use self-regulated captioning and how it affects their performance.

## **2. Self-regulation using PSC**

PSC provides for a limited number of words by introducing features that enable the detection of difficult words/phrases. It benefits from automatic speech recognition systems and corpora to identify challenging acoustic and lexical video segments. It further provides word-level synchronization for smoother audio-to-text matching. We considered a combination of acoustic and lexical features, ranging from acoustic neighbors, speech rate, and word frequency, to conduct a rigorous calculation that distinguishes easy from problematic words (see Mirzaei, Meshgi, & Kawahara, 2018). The system prepares captions for different levels – beginners, intermediates, and advanced – by adjusting the parameters when generating the caption. Given that some learners have a better

vocabulary reservoir but less tolerance in coping with fast speech or vice versa, we have incorporated a user-friendly interface to adjust the system's features and override the default parameters. This enables increasing or decreasing the number of words shown for personalization and promotes autonomous and self-regulated learning (Figure 1).

Figure 1. PSC with self-regulation features to adjust the caption based on preference



### 3. Preliminary experiment

Our participants were 33 intermediate English learners (520~725 TOEIC scores), undergraduates (19~20 years old, 15 males and 18 females, from engineering and humanities fields) whose native language was Japanese. The whole experiment was conducted online. The participants connected to the experimental sessions using a web browser, and the entire sessions and log data were recorded. Two pilot sessions were conducted to help learners familiarize themselves with the system and suggest parameters for their level. Before watching videos, the learners were tested for vocabulary size and tolerable speech rate to adjust the system's default parameters accordingly. They watched a series of TED talks (15~20 minutes each) on various topics and answered multiple-choice comprehension questions after each. During the watching phase, learners could play with the system to generate the appropriate amount of captions or keep the suggested parameters. The first five minutes of each video were used to find the best setting through self-control, and the log data of the learner's preferable setting was analyzed once the setting had been decided. We also elicited learner feedback through an open-ended questionnaire to complement our data with the actual learner experience.

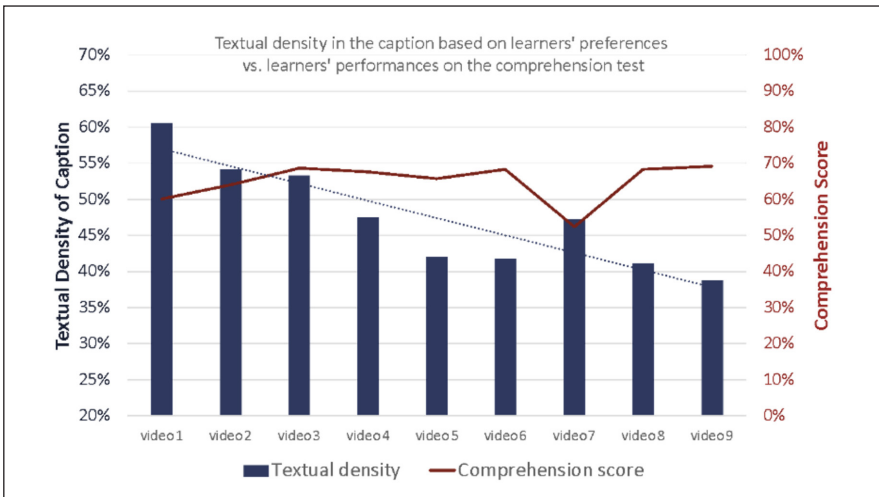


#### 4. Results and discussions

Most participants (18) took a conservative approach by starting with a high-density caption, keeping it for a while, then gradually decreasing it. We observed that a few learners (5) took a more challenging path by starting with less than 30% of the text. Three learners quickly switched to a higher density caption, and only two continued with less than 30% text throughout the experiment. Ten participants leaned toward a trial-and-error approach, mostly starting with a medium-density caption and a slight increase or decrease over time. Two of them kept a steady strategy and barely changed the amount of the text.

As Figure 2 shows, the overall trend analysis shows that, on average, the learners tended to choose fewer words in the caption while striving to gain an acceptable performance. We also observed that such a decrease did not significantly affect the overall comprehension, and the learners’ performances showed a relatively steady increase.

Figure 2. Experimental results



Video #7 was notably harder than other videos in terms of topic (medical), vocabulary (terminologies), and speech rate. For this particular video, most learners considered receiving more captions to deal with the video’s difficulty; however, given that unknown technical terms were frequently presented in this video, the average performance showed a decrease. This result indicates that when the input is high above the learner’s level or the topic is difficult, using more text in the caption

will not necessarily lead to better performance. This finding is essential in that when presenting an input to the learner, it is necessary to consider the learner's background knowledge and the difficulty level of the video relative to the learner's level.

The analysis of self-regulation strategies used by the learners shows that they were primarily successful in picking the appropriate amount of words needed to attain a relatively acceptable performance level. Meanwhile, for some learners, adapting the wrong settings led to low performance, while for others, it was hard to find the best setting. Even though the overall performance was not significantly high, data from the learners' self-disclosure showed that most learners enjoyed self-regulation. They felt motivated to control their learning process, which may promote autonomous learning, highlighting the effectiveness of using self-regulated methodologies for practicing listening. However, it is crucial to consider that this approach may not work for all learners, especially those who find it hard to self-regulate (Roussel, 2011). It is anticipated that through practice, learners can become more familiar with the system, the types of listening challenges they face, and the areas they need to improve. Additionally, learner feedback revealed that for those overly reliant on the caption, the idea of using partial text is not easy to adapt. For this group, it may take significantly more time to feel confident enough to decrease the dependence on the caption slowly.

## 5. Conclusions

This article introduced a smart caption with adjustable parameters to meet the requirement of individual listeners. Several experiments were conducted with self-regulation listening episodes. The findings revealed a positive learning experience while gleaning valuable insights into differences in learner preferences and indicating the importance of incorporating learner differences into computer assisted language learning systems to provide personalized L2 listening practices. The current study focused on intermediate learners; however, the findings indicate a need to fortify the results by including different proficiency levels and backgrounds in future studies.

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# EFL written production through blogging: computer versus mobile insights

Salvador Montaner-Villalba<sup>1</sup>

**Abstract.** Following up on [Montaner-Villalba et al. \(2020\)](#), this research focuses on written competence in the English language. The huge advance in technology permits teachers to use mobile applications. This quantitative design research investigated WordPress, in its mobile version, on written competence in English as a Foreign Language (EFL). One treatment group (12 students) and one control group (12 students) of A2 (Common European Framework of Reference for Languages) EFL learners at a secondary school in Valencia (Spain, N=24) participated during the 2018-2019 academic year. While, on the one hand, learners from the treatment group utilized WordPress in its mobile version, on the other, learners from the control group used WordPress in its computer-based version. The outcomes proved that the learners from the treatment group significantly improved their level of written competence in comparison with the learners from the control group. Accordingly, this research recommends utilizing WordPress in its mobile version in secondary education.

**Keywords:** mobile blogging, computer-based blogging, written competence, EFL, WordPress.

## 1. Mobile-assisted language learning

WordPress is an open-source content management system platform featured by plugin architecture and a template system. WordPress can also be utilized in its mobile version. This platform has similar options to the computer-based version. This research aims to analyze blogging to practice EFL written competence both in its computer-based and mobile versions. Some empirical research ([Gonulal, 2019](#); [Montaner-Villalba, 2019](#); [Ramos, 2018](#); [Sánchez Ambríz & Martínez Balboa,](#)

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**How to cite this article:** Montaner-Villalba, S. (2022). EFL written production through blogging: computer versus mobile insights. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 279-285). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1471>

2018) focused on the possibilities given by mobile devices. Ramos (2018) focused on WhatsApp as a tool to enhance French written competence. Results showed that learning was successful. However, the author recommends a longitudinal research to check learners' motivation. Similarly, Sánchez Ambriz and Martínez Balboa (2018) explored WhatsApp in EFL to promote both oral and written competence. Outcomes proved that learners achieved better outcomes in the post-test. Gonulal (2019), in his mixed-method research, explored Instagram as a tool to enhance EFL vocabulary and communication skills. The findings showed that learning was significantly positive. Montaner-Villalba (2019) focused on Instagram as a tool to promote EFL written competence. In this quantitative research, the author concluded that learners from the treatment group improved notably at the end of the research. However, it could not be confirmed that there was a notable improvement in learners from the control group. Moreover, outcomes proved to be slightly higher in the control group, without being initially expected.

Regarding mobile blogging, it must be highlighted that no empirical research on blogging in its mobile version has been published. In this sense, Jung Jee (2011) offered a short introduction to a huge variety of emerging Web 2.0 as well as mobile technologies which can be utilized not only in foreign language learning but also in second language learning. This makes this current research important in the field of study related to mobile-assisted language learning and, particularly, to EFL learning in secondary education in Spain.

## **2. Method**

### **2.1. Participants**

Two different groups of A2 level EFL learners participated in this research. They were chosen randomly. The first group consisted of 12 students in the treatment group (m-blogging). The second group was composed of 12 learners in the control group (computer-based); 24 learners, aged 14-15, participated in this research. They were studying their fourth year of secondary education at the time of this experiment at a state secondary school in Valencia.

### **2.2. Materials**

This study utilized a quantitative research design including a pre-/post-written task group design for both the treatment group and the control group. Four different

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written tasks were administered to the learners participating in this experiment. The two initial written tasks were aimed at checking students' level before the experiment commenced. The two post-written tasks assessed learners' improvement of EFL written competence.

### 2.3. Procedures

The initial digital written task was administered at the beginning of the year, 2018-2019, during the fourth week of September. Before commencing the experiment, we considered it adequate to offer learners three sessions to teach them how to utilize WordPress. These sessions were developed in the three weeks before the initial written task was given to learners. The learners' outcomes were recorded for further correlation to the scores of the final written online task, which was given in the last week of May 2019. [Table 1](#) clarifies the stages of the experiment.

Table 1. Procedures

Procedures	When	Description
Initial written task	Beginning First Term	Initial digital written task takes place
Presenting experiment	Second week September	Teacher introduces experiment, explains aims, and methodology
Beginning experiment	Three first weeks of September	Three sessions are focused on explaining how WordPress functions
Final written task	End of the academic year	Final online written task develops

The outcomes of both the initial and the final online written tasks were analyzed to verify the research hypothesis.

## 3. Outcomes

In this section, the different outcomes of both the initial and the final written digital tasks are analyzed considering quantitative methods. The collecting data was made through WordPress in its computer-based version (control group) and via WordPress in its mobile version (treatment group). The means of the various variables were calculated through Excel.

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### 3.1. Treatment group<sup>2</sup>

Firstly, [Figure 1](#) addresses the outcomes of the initial online written task; secondly, [Figure 2](#) shows the average of the post-writing.

Figure 1. Average outcomes of the initial writing digital task, treatment group

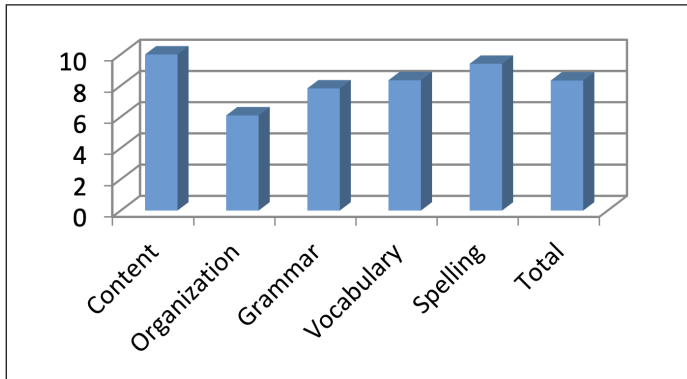
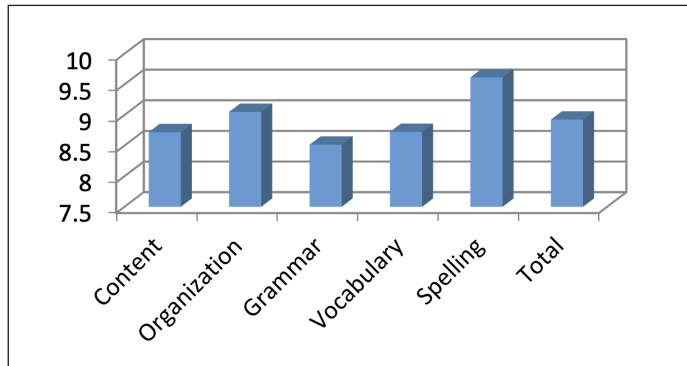


Figure 2. Average outcomes of the post-writing online task, treatment group



### 3.2. Control group

Next, the quantitative results of the control group are analyzed. [Figure 3](#) addresses the results of the initial digital written task and [Figure 4](#) shows the average of the post-writing.

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2. The meaning of the numbers in Figures 1, 2, 3, and 4 are related to the grades which are used within the Spanish educational system. The grades or marks from 0 to 4 imply failure. Next, the grade of 5 means 'Pass', the mark of 6 implies 'Good', the grades of 7 and 8 mean 'Very good' and, finally, the grades of 9 and 10 imply 'Very excellent'.

Figure 3. Average outcomes of initial writing online task, control group

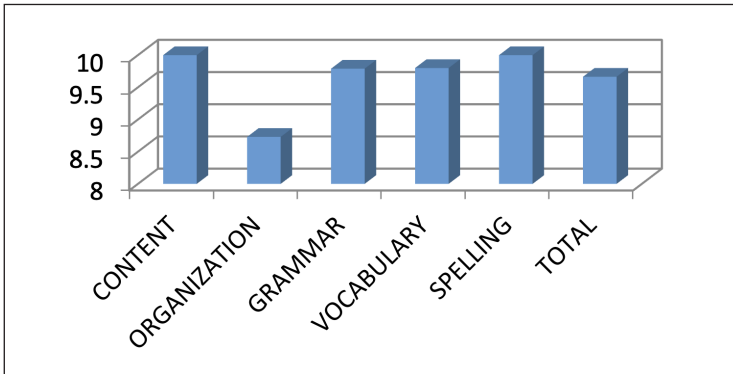
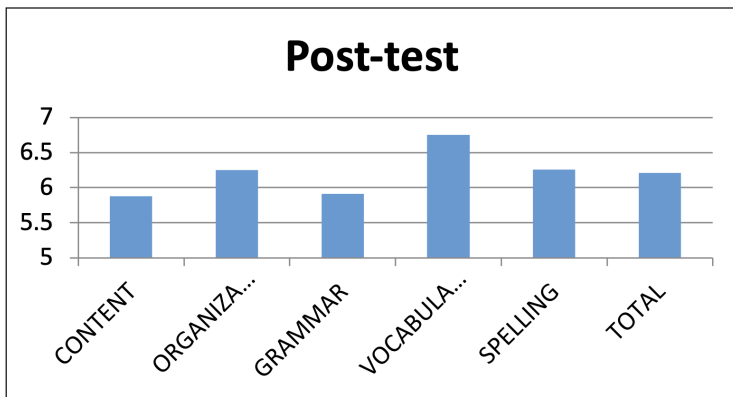


Figure 4. Average outcomes post-writing digital task, control group



#### 4. Discussions and conclusion

Firstly, the outcomes of the initial digital written task are discussed from a comparative perspective between the treatment group and the control group. This task aimed at measuring the initial level of EFL written production by learners. The total average of the treatment group is 8.33 while the total average of the control group is 9.68. This does not fulfill the initial expectation. When comparing both the initial online written task (8.33) and the final one (8.92) in the treatment group, there is a slight improvement between them, implying, thus, that treatment group learners slightly improved their level of written production in WordPress in its mobile version.



Secondly, the results of the control group learners are justified by explaining the differences between the treatment and control group regarding the initial online written task. Concerning *vocabulary*, the control group (9.8) is slightly higher than the treatment group (8.35). In this task, both groups were required to write about their daily actions. Regarding *grammar*, the control group (9.79) is significantly much higher than the treatment group (7.82). The control group learners possibly scored better results because they correctly identified grammatical issues required in this task. It is curious to observe here that the control group shows better results than the treatment group. This was not initially expected before commencing the experiment.

As for the *organization*, the control group (8.73) is notably higher than the treatment group (6.09). This huge difference between both groups can possibly be explained by the fact that control group learners were more aware than the treatment group of the relevance of writing cohesive and coherent texts and using well-structured paragraphs; also taking into consideration that writing in computer-based WordPress is easier than in mobile version. This was not initially expected.

Thirdly, the outcomes of the final online written task are discussed by comparing the initial and the final tasks. The *content* is notably higher in the treatment group (8.7) than in the control group (5.1). In the final task, learners wrote about their experience in this experiment. It is obvious that the outcomes of the treatment group are better since they understood what was required. As for the *organization*, the results of the treatment group (9.05) are higher than the control group (6.25). Learners from the treatment group managed to write well-structured texts satisfactorily while learners from the control group did not.

In relation to *grammar*, the results of the treatment group (8.5) are better than the control group (5.9). Control group learners confused the conditional form *would* + infinitive and, instead, they utilized the future form *will* + infinitive. The complete lack of connectors was key in their low marks. As for *vocabulary*, the treatment group (8.7) is higher than the control group (6.7). Learners from the treatment group utilized more varied and richer vocabulary than learners from the control group.

Related to *spelling*, the treatment group (9.6) is higher than the control group (6.2). While treatment group learners paid more attention to spelling, learners from the control group did not obtain good marks in the final written digital task. The outcomes proved that the treatment group improved slightly whereas the control group decreased significantly. As a whole, the total average of the treatment group

is notably higher than the control group. These results were initially expected before commencing the experiment.

From the outcomes given through the tool Excel, we can clearly state that the results improved significantly at the end of the experiment in the treatment group in comparison with the control group. This means that the participants in the treatment group improved their level of EFL written competence through WordPress in its mobile version while the outcomes from the control group in the final written online task decreased notably if we compare them with the results from the initial digital written task. For this reason, it is recommended that learners practice EFL written competence through WordPress and, particularly, in its computer-based version. Moreover, we would encourage scholars to do further research on m-blogging related to enhancing other linguistic skills.

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## Telecollaboration and languages for specific purposes

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**Abstract.** There is no doubt that telecollaboration currently plays an important role in foreign language learning and, not less so, in the field of English for Specific Purposes (ESP). Guth (2020) highlighted how telecollaboration has rapidly evolved in the past years as an innovative approach, and how it has brought together a whole community of academics and researchers interested in the field. In this paper, a brief overview of the various presentations that took place in the EuroCALL Computer-Mediated Communication (CMC) Special Interest Group (SIG) Symposium is offered. The paper introduces four projects based on telecollaboration contextualised within an ESP classroom in higher education. The first one focuses on a collaborative debate project using English as a *lingua franca*; the second elaborates on improving learners' pragmatic skills through telecollaborative role-plays; the third describes an immersive Virtual Exchange (VE) aiming to foster the students' civic and entrepreneurial competence, while enhancing their intercultural communicative competence. The fourth project aimed at improving students' business communication and management skills in English in a multicultural environment.

**Keywords:** telecollaboration, virtual exchange, languages for specific purposes, English for specific purposes, pragmatics, virtual reality, intercultural competence.

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**How to cite this article:** Montaner-Villalba, S., Gimeno-Sanz, A., Di Sarno-García, S., Sevilla-Pavón, A., Nicolaou, A., Koris, R., & Vuylsteke, J.-F. (2022). Telecollaboration and languages for specific purposes. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouëсны, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 286-291). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1472>

## 1. Introduction

CMC can be described as any human communication which takes place with the aid of two or more electronic devices. The term CMC has traditionally referred to diverse kinds of communication, such as e-mails, e-forums, instant messaging, etc. This term has also been applied to other forms of text-based interaction, such as text messaging (Thurlow, Lengel, & Tomic, 2004). Significant research on CMC is mainly focused on the social effects of diverse computer-supported communication technologies. Telecollaboration or VE is indeed one of the most enriching and interesting forms of authentic communication in foreign language learning in general and in ESP settings, in particular. This is what triggered the EuroCALL CMC SIG to bring together six experts to explain current practices in telecollaboration which can enhance language learners' motivation.

## 2. Proposals of the symposium

### 2.1. The what, why, and how of telecollaboration projects in ESP in higher education

In her presentation, Gimeno-Sanz explored two projects combining telecollaboration and ESP in higher education. Both projects were based on collaboration and product creation tasks as described by Harris (2002) and Helm and Guth (2010), which are the most demanding and, therefore, the least often used. The first project between students from two Spanish universities using English as a lingua franca was based on a collaborative debate project. The post-project questionnaire revealed that learners perceived they had primarily improved their speaking and listening skills, as well as acquiring new vocabulary relating to their field of study. In addition, students pointed out they had improved a number of 'life skills' such as public speaking, critical thinking, articulating thoughts, learning to think on their feet, controlling emotions when speaking in public, and improving their presentation skills. These results were aligned with their expectations, as evidenced by a pre-project questionnaire.

The second project, with Spanish ESP students and US students of Spanish as a foreign language, had the clear goal of developing the students' intercultural awareness. It was conducted bilingually through synchronous and asynchronous tools to give both sets of learners equal opportunities to practise their foreign language. The pre-project survey showed that, overall, the students were open-

minded about discussing intercultural issues and very positive toward collaborating with fellow students from different cultural backgrounds (Gimeno, 2018). They were happy to use information and communications technologies for language learning purposes and did not think that communicating in writing through a private social network or orally through a video-conferencing system hindered authentic intercultural communication and interaction. The surveys also showed that the learners' expectations correlated with their stated post-project gains. Regarding specific benefits, there was clear evidence that the Spanish students saw the project as being instrumental for their English as a foreign language improvement, which was one of the project aims. The artefact students had to produce collaboratively in groups of four (two US-based and two-Spain-based) was a bilingual radio podcast simulating an interview where each cohort summarised their findings in relation to the topics under discussion.

## **2.2. Does participating in a telecollaborative project foster the acquisition of apologies? Insights from the ESP context**

Since Yus (2011) coined the term *cyberpragmatics*, which is “the application of pragmatics to online interactions” (Orsini-Jones & Lee, 2018, p. 26), the interest in analysing the pragmatic implications of online encounters has evolved, although the field of interlanguage pragmatics in computer-assisted language learning is still under-investigated (Sykes & González-Lloret, 2020). Despite this, Orsini-Jones and Lee (2018) argue that cyberpragmatics is of paramount importance in telecollaboration. Based on these presumptions, Di Sarno-García presented a comparison between the results obtained from a control group (n=17) and an experimental group (n=7) that participated in a telecollaboration project. Di Sarno-García aimed to demonstrate that telecollaborative encounters are a suitable environment for the development of L2 pragmatic competence and for the acquisition of the speech act of apologies, which is usually a problematic speech act that they are likely to perform in their future professional life. Participants from both groups were aerospace engineering students from the Universitat Politècnica de València (Spain), and they performed six open role-plays to elicit their use of apologies. The difference lay in the fact that participants in the control group carried out the task in pairs with their Spanish classmates in a face-to-face setting, while participants in the experimental group conducted the task with L1 or highly proficient speakers of English from the University of Bath (UK) through synchronous Zoom sessions. Their apologies were coded following a taxonomy based on Blum-Kulka and Olshtain (1984), Leech (2014), and Martínez-Flor (2016). The results of the qualitative analysis revealed that the apologies produced by the experimental group were more complex and sophisticated as they were

performed using a wider variety of strategies compared to those of the control group. On the other hand, findings from the quantitative analysis carried out through an Eta coefficient revealed a significant correlation ( $r=.71$ ) between the number of strategies used and the modality where they were performed. The descriptive analysis of the responses obtained in the pre- and post-test of each group demonstrates that there is a higher tendency of improvement in the case of the experimental group, while in the case of the control group the means reveal a regression in the responses obtained to different questions. Therefore, we can claim that telecollaboration projects are an adequate environment for the practice and acquisition of the speech act of apologies within an ESP context.

### **2.3. Sustainable development goals meet immersive VE: the youth entrepreneurship for society in a 3D initiative**

Immersive telecollaboration, immersive VE, or 3D VE involves the interaction, communication, and collaboration of geographically dispersed groups of learners via immersive virtual reality by means of engaging participants in 3D-embodied interaction. To our knowledge, there is very limited research exploring 3DVE for language learning in ESP contexts. To address this gap, the 3DVE research project YES3D was launched with the participation of 16 business English students from the Cyprus University of Technology and 26 students from the Universitat de València. Through the completion of different social entrepreneurship project tasks, participants produced various collaborative digital artefacts in their plurinational teams. Interaction, communication, and collaboration were mediated by various tools, including high immersion virtual reality technologies. The co-authored digital artefacts were analysed in terms of their alignment with the sustainable development goals proposed by [UNESCO \(2017a, 2017b\)](#), thus shedding light on how YES3D contributed towards fostering the students' civic and entrepreneurial competence while enhancing their intercultural communicative competence within a discipline-specific, ESP curriculum. This was achieved through the creation of highly immersive experiences in the participants' synchronous interactions which afforded opportunities for increased engagement and effective collaborative work on a meaningful common goal.

### **2.4. VE in the business communication classroom: catalyst for employability skills and intercultural competence development**

This presentation (Koris and Vuylsteke) described the benefits of VE on students' knowledge acquisition and skills development. The VE project described was

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implemented in the field of English business communication by a Hungarian and a Belgian university for three consecutive academic years between 2019 and 2021. Students participating in the VE represented a large variety of nationalities with diverse cultural and educational backgrounds. During the collaboration, participants worked online in virtual teams simulating real business communication practices in English (Swartz & Luck, 2018). Capitalising on the multicultural diversity of the teams, students engaged in discussions about the cross-cultural differences in their local business environments, job markets, recruitment processes, job applications, and interviews. At the end of the project, students participated in a real online job interview with professional recruiters. As a final assignment, students presented a digital portfolio on their learning experience, professional development, acquired employability skills, and intercultural competence. The qualitative analyses of student team reports, digital portfolios, and results of pre/post-project surveys of the three iterations revealed that students developed employability skills by facing new challenges in the culturally diverse business world. Not only did it allow students to improve their business communication and management skills in English in a multicultural environment, but it also challenged their intercultural communication competence and global collaboration skills. Hence, VE is an efficient means of and a catalyst for developing students' intercultural competence without physically leaving their classrooms.

### **3. Conclusion**

The EuroCALL CMC SIG symposium participants provided ample evidence demonstrating that telecollaboration or VE practices in a languages for specific purposes context has more advantages than drawbacks. Through these projects, students can improve their linguistic skills and gain intercultural competence, two essential assets in today's global world that would otherwise not be possible in a traditional classroom setting where students only interact with fellow students or with their teacher. It was also demonstrated that pragmatic skills, which are crucial in communication, can also be developed through telecollaborative activities. The authors highlighted several requirements for these projects to be successful, that is, strict coordination between the project tutors from both participating universities, clear instructions provided to the learners at the start of the project, implementation of questionnaires to gather both expectations at the outset and satisfaction upon conclusion, a clear artefact to be produced collaboratively by the mixed cohorts of students, full integration into the course programme, clear evaluation guidelines, and accounting for student grading.

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# The role of CALL in the ecology of language teachers' well-being and professional development

Dinh Thien Bao Nguyen<sup>1</sup>

**Abstract.** While previous studies have established the significance of CALL (Computer-Assisted Language Learning) in language education, the extent to which CALL influences language teachers' well-being and their professional development has not yet been fully understood. This echoes Dörnyei's (2018) argument that although language teachers are the most important factors in learners' success, their contributions have not been considered sufficiently. As such, this short paper presents an ongoing mixed-methods project investigating Vietnamese and Japanese language teachers' well-being and the role of CALL in the ecology of language teaching at both personal and work levels using Bronfenbrenner's (1979) ecological system framework. The primary method is the grounded theory analysis and preliminary results from Vietnamese teachers' semi-structured interviews which have shown the importance of CALL in language teachers' well-being's ecology. Also, the role of the community of practice has also emerged as an informal support in language teachers' ecological well-being system.

**Keywords:** language teachers, CALL, well-being, ecological perspective, professional development.

## 1. Introduction

Teaching English is not an easy endeavor, especially when teachers have to handle multiple tasks, some of which include administrative paperwork, teaching methodologies, and classroom management techniques. Language teachers inevitably need to find ways to maintain their physical and mental well-being on a daily basis. Mercer (2021) argues that problems related to well-

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**How to cite this article:** Nguyen, D. T. B. (2022). The role of CALL in the ecology of language teachers' well-being and professional development. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 292-296). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1473>

being in education, in English Language Teaching (ELT) particularly, should be solved as soon as possible when more and more mental health issues are being reported, especially depression and anxiety. Some uncovered by previous studies are increased emotional labor, shifting identities, energy-intensive teaching methodologies, language anxiety, intellectual demands (Benesch, 2017), and more importantly, emotional exhaustion (Daniels & Strauss, 2010). CALL is no longer an uncommon approach in a language classroom. Research investigating CALL and its affordances has been the focus of many scholars. Nevertheless, studies investigating the importance of CALL to language teacher well-being are still scarce. For this reason, as part of a PhD project investigating language teacher well-being in Vietnam and Japan from the ecological perspective, this paper sets out to study the role that CALL plays in each layer of language teachers' ecological well-being system and the extent to which CALL affects language teachers' well-being and their professional development, particularly their physical and mental health.

## 2. Literature review

### 2.1. Language teacher well-being from the ecological perspective

To understand language teachers' well-being, it is important to perceive them as individuals whose well-being is unique and paramount to the whole ecological system of ELT. In this respect, Bronfenbrenner's (1979) ecological system framework may be helpful. The ecological system of a person needs to be taken into consideration in order to understand their development (Bronfenbrenner, 1979). He proposes that the system comprises four main subsystems, namely the microsystem, mesosystem, exosystem, and macrosystem. According to Cross and Hong (2012), the microsystem is an environment in which teachers, students, and parents communicate and influence one another in a multidirectional and reciprocal relationship. The mesosystem is the place where teachers do not participate directly, yet they are affected on a daily basis. According to Price and McCallum (2015), it includes interactions among different microsystems such as teachers' work and their private life. The macrosystem is the biggest environment which encompasses the entire ecological system of language teacher well-being. Some typical factors are politics, economy, legal, and cultural influences. Even though teachers do not participate directly, they are influenced by this system because they need to follow the norms and understand what is happening in their working culture.

## **2.2. CALL as a participant in the ecology of language teacher well-being**

Thanks to previous research into technology, the assistance CALL provides language teachers with can be categorized into two main parts, that is, acceptance and persistence toward CALL. If positive attitudes toward CALL result in a higher frequency of CALL application and enhance perseverance upon encountering CALL-related difficulties (Drossel, Eickelmann, & Gerick, 2016), insufficient training and preconceived ideas toward CALL (Stockwell, 2012) might lead to CALL rejection. Hence, CALL is not only a teaching approach, it also plays a key role in teachers' professional development and well-being. Helping teachers handle CALL-related difficulties and put it into practice might result in a better outlook toward the profession and motivation for long-term pursuit. Therefore, this project focuses on studying CALL and the role it has in each system of the language teacher well-being's ecology. Three research questions encompassing the inquiry are as follows.

- To what extent does CALL influence the ELT ecology of language teacher well-being?
- To what extent does CALL influence language teachers' professional development from the ecological perspective?
- To what extent do language teachers in Japan and Vietnam differ in their perspectives on the role of CALL in the ecology of their well-being and professional development?

## **3. Methodology**

For this PhD project, participants are teachers at tertiary level from Japan and Vietnam. A mixed-methods design is employed using the grounded theory approach and data triangulation as the primary method. Data includes (1) semi-structured interviews conducted individually with 30 language teachers who are currently working at university, (2) focus group interviews, and (3) a quantitative-oriented questionnaire.

However, as this paper sets out to understand the role of CALL in the ecological system of language teachers' well-being, only data collected from the individual semi-structured interviews are utilized. Three participants, two of whom have

a master's degree, have been interviewed. They are all working in the private sector with at least five-year teaching experience. The interview time varies from 45 minutes to 60 minutes focusing on three main parts and the protocol was adapted from Dörnyei's (2007) advice on conducting interviews. The first part focused on the participants' backgrounds and their teaching experience. The second part includes open-ended questions investigating the role of CALL in their well-being and professional development, such as '*how do you feel about technology in teaching*', '*what do you do when you encounter a technological problem*', and '*is using technology stressful to you*'? The interviews ended with a feedback session where the participants asked questions related to the interview. Interview data were then analyzed qualitatively using the grounded theory approach and the results are presented in the next section.

#### 4. Preliminary results

Findings from three interviews indicate that not only does CALL play an important part in the microsystem (i.e. the individual level), but it also exists in other systems, namely meso-, exo-, and macrosystem of language teachers' ecological well-being. The participants mentioned that using CALL was not for their own benefits anymore (the mesosystem). They need the competence to help engage their students (the microsystem) and increase the productivity for their schools (e.g. delivering online classes, handling administrative tasks, etc.). Also, the participants mentioned that frustrating as CALL learning may be, it was also a catalyst to initiate more informal conversations with their peers, which eventually strengthened the bonding in the workplace.

#### 5. Conclusion

Overall, analysis from the interviews indicates that CALL does play a key role in the ecology of teachers' well-being, especially the way it influences language teachers' professional development in this ecology. This echoes with Hodstadler et al.'s (2020) arguments on the stakeholders teachers have to deal with in their profession, such as school policies or colleagues. However, CALL's existence does not entirely entail complete negativity. The community of practice established through the CALL frustration in this study helped teachers overcome CALL-related obstacles and enhanced their well-being. For institutions and policymakers in both public and private sectors, this hopefully can become a helpful reference to construct a more comprehensive support system in the workplace environment

to help teachers and learners gain optimum outcomes. More importantly, the study also hopes to shed more light on how to provide teachers with trustworthy guidelines to help them deal with mental health issues on their own and advance their professions.

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# An Corpus Cliste: creating a learner corpus for Irish from a new, purpose-built iCALL platform

Neasa Ní Chiaráin<sup>1</sup>

**Abstract.** *An Corpus Cliste* ('*Clever Corpus*') is an Irish language learner corpus. The corpus data comes from a purpose-built intelligent Computer Assisted Language Learning (iCALL) platform called *An Scéalai* ('*the Storyteller*') and comprises both audio and text, produced by second and third level learners of Irish. Metadata (e.g. L1, level of Irish, dialect preference, age) is saved with every learner account, along with data on platform engagement (e.g. speech/language technologies employed, time spent on task). This paper illustrates how *An Corpus Cliste* is structured and is being prepared for analysis and the methodologies and resources that are being used to exploit it with a view to enhancing the learning experience.

**Keywords:** learner corpus, iCALL, Irish, speech technologies.

## 1. Introduction<sup>2</sup>

**An Corpus Cliste** ('*Clever Corpus*') is a learner corpus that is being collected within the framework of an Irish (Gaeilge) iCALL platform, *An Scéalai* ('*the Storyteller*'). Two types of learner production data are being harvested within *An Scéalai* – audio and text. The current discussion centres on learners' written language, which currently consists of 44,093 learner stories – a total of 5,732,397 words at an average of 130 words per story (July 2022). Analysis of the spoken language will follow at a future date.

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2. Funding from An Chomhairle um Oideachas Gaeltachta agus Gaelscolaíochta and the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media is gratefully acknowledged.

**How to cite this article:** Ní Chiaráin, N. (2022). An Corpus Cliste: creating a learner corpus for Irish from a new, purpose-built iCALL platform. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 297-301). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1474>

*An Corpas Cliste* represents a novel approach to the design of language learning technologies for Irish. The learner corpus being collected is intended (1) to serve as a sound empirical basis for linguistic research into the process and stages of Irish language acquisition (e.g. investigating the most common errors made by learners at various stages of proficiency), and (2) to enhance the *An Scéalai* iCALL platform itself, making it more effective for future users. Analytic results from *An Corpas Cliste* are intended to be the driver of the personalised corrective feedback, which is at the heart of *An Scéalai*.

To appreciate the nature of the corpus and the ways in which it will be deployed, the background of *An Scéalai* is explained.

## 2. Background: *An Scéalai*

The *An Scéalai* iCALL platform is freely available as a desktop web application (see <https://abair.ie/scealai>). It has been designed from the ground up and is aimed at the individual language learner; 4,896 account registrations are logged, with circa 2,736 ‘active’ users. It is part of the *ABAIR* initiative, which is developing speech technology for Irish (particularly Text-To-Speech (TTS) and Automatic Speech Recognition (ASR) systems – see <https://abair.ie>).

In the platform, learners write content, such as reflective diaries, stories, and essays, and are given feedback via (1) the latest versions of the *ABAIR* technologies, (2) grammar checker/dictionaries, and (3) teacher feedback (see [Ní Chiaráin et al., 2022](#)). The platform provides exposure to native speaker models of the language (critical in the Irish context), allowing proof listening and correction by choosing a preferred voice from three main (very different) dialects. Another key technology being employed, which learners report as extremely useful, is the grammar checker *An Gramadóir* ([Scannell, 2013](#)). Dictionaries (see [teanglann.ie](#)) are integrated and, when used in a class setting, learners can obtain feedback from their teacher via written/voice notes. Learners can record themselves and compare recording to native speaker (synthetic) models. By integrating the technologies, the multiple skills of writing, reading, listening, and speaking are promoted in tandem.

A major part of the rationale for building *An Scéalai* was to have our own configurable tool to conduct Second Language Acquisition (SLA) research on Irish, to enable the harvesting, analysis, and exploitation of the types of learner data the platform is designed to yield.

### 3. *An Corpus Cliste*

**Rationale:** our aim is to use *An Corpus Cliste* as a mechanism for tracking how Irish language learning happens over time. By using the corpus to investigate learning gains over a long-term at both macro and micro levels (i.e. both the broad collection of language learners and individual language learning journeys), we hope not only to feed this information back into the iCALL platform to benefit our learners but also to inform curriculum development on a wider scale.

To achieve this, we are capturing an ordered series of events by language learners. In the current setup, learners' stories are saved after each edit made (if the user stops typing for 1.5 seconds, their story is saved). This yields large amounts of very detailed data. This data granularity presents challenges from an analytic point of view but will be extremely useful, e.g. to develop pedagogical strategies to deliver appropriate content to learners. By also saving learner engagement we gain insights into learners' usage of individual speech and language technologies (TTS/grammar checkers/ASR systems).

The corpus data will in future lend itself well to machine learning methods, as we identify patterns in learning behaviour both at individual and group level. However, as illustrated below, extracting meaningful information from the corpus is crucial and we are not yet at the stage that we can depend on automatic methods to give reliable information.

### 4. Content management

The open-source NoSQL database management system MongoDB is being used to manage the *An Corpus Cliste* content. It is being used not only to store learners' final stories and accompanying feedback (both text and audio), but also to store learners' story composition journeys, including running TTS, listening back, performing grammar checks, receiving teacher feedback, and dictionary lookups. Timestamps are saved with each engagement as well as metadata provided by the learners.

To date, a considerable amount of effort has been devoted to the processing of data. Stored in several collections of a MongoDB database, the data has been processed with Python to produce several categorical DataFrames. These DataFrames serve as an attempt to give researchers a full overview of the learner corpus. The current structure allows us to explore the data and answer some initial research questions.



Data processing is an ongoing exercise. Restructuring will be an iterative process, depending on the data needed to be extracted (e.g. specific age groups/time frames/levels of Irish) to give insights on learner engagement/language acquisition processes. Ongoing collection of data is being used to calculate relevant statistics, (e.g. numbers of learners/stories), as well as measures of SLA progress, (e.g. changes in grammar/writing errors over time). These statistics, along with the regular manual analyses conducted by linguistic researchers serve as a valuable resource for creating learner models in the future, a major goal of the current initiative.

## 5. Corpus analysis – preliminary findings

A preliminary analysis was conducted on the entire corpus to investigate the most common errors being made by learners. Two different approaches were employed – an automatic analysis using *An Gramadóir* and a manual one, where a linguist identified the most frequent types of errors by examining the written text.

The results of the first (automatic analysis) approach yielded the following as the ‘Top 5’ error categories, (terms as encoded in the grammar checking software):

- incorrect;
- unknown word;
- non-standard form;
- lenition missing; and
- possibly a foreign word.

Unfortunately, the description of the errors detected is often not helpful to the learner – the most flagged error is ‘incorrect’, which is an umbrella for many different items where the spelling deviates from the expected. These reflect a variety of grammatical errors, as well as simple typos, etc.

The result of the second (manual analysis) approach indicates that the ‘Top 5’ error categories involve issues with:

- genitive case;
- the lenition associated with the possessive adjective ‘a’;
- relative clause construction;
- missing acute accents (indicate long vowels); and

- misspellings associated with broad/slender vowel agreement (pronunciation-related).

Although the manual analysis is preliminary and not yet the result of a rigorous scientific analysis, it is nonetheless clear that the two approaches yield completely different results from one another (note: a thorough error analysis of a corpus subset (n=172 learners) is ongoing).

The take home point is that the grammar checker, as currently configured, is not fit for the present purpose. It simply does not differentiate adequately among different kinds of errors that show up in learners' written forms. In this way it does not align with what the teacher would want to focus on in terms of individual grammatical learning targets. Furthermore, the *An Gramadóir* output, as with most generic grammar checkers, is not in any case designed for the learner. The type of grammar checker needed for an L2 learner would ideally be designed to provide the type of personalised feedback that is user-friendly for learners at different stages.

## 6. Conclusions

Current developments for *An Corpas Cliste* include the building of independent grammar checking modules for specific aspects of the language. Analysis of the spoken language corpora will require a different set of analytic skills. For all these efforts, the training of language experts is crucial.

As mentioned above, we aim to deploy state-of-the-art machine learning approaches to deliver personalised corrective feedback via *An Scéalai*. However, given the frequent assumption that machine learning approaches can of themselves do everything, we advise caution as we are reminded that the 'i' in iCALL will continuously demand human linguistic and pedagogical knowledge in the loop.

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# Twitter as a dynamic language learning platform for learners of Irish as an additional language in a primary school setting in Ireland: review and recommendations

Jane O'Toole<sup>1</sup> and Ann Devitt<sup>2</sup>

**Abstract.** This paper explores the utilisation of *Twitter* as a dynamic language learning platform in order to create an authentic domain of use for learners of Irish as an Additional Language (IAL) in a primary school setting in Ireland wherein 20 fourth class children and their parents participated. The Irish language context is firstly introduced, which contextualises a rationale for utilising *Twitter* for language learning. Teacher, child, and parent engagement with *Twitter* is then outlined with reference to the action research methodology employed. The repository of class tweets, periodic participant advisory group discussions and questionnaires, coupled with teacher-researcher reflection informed a qualitative data analysis. Results indicate notable student engagement with and enjoyment of tweeting in class as *Gaeilge* [in Irish] whereby the class *Twitter* account emerged as a practicable language learning platform. Its affordances enabled the student composition and publishing of short texts (tweets) and the provision of authentic Irish tweets for class reading. Parent and child engagement out of class, while relatively low, also demonstrated a promising additional domain of use, subject to the negotiation of orientation-related and implementation-related challenges for learners in a blended setting. In conclusion, recommendations to support the use of *Twitter* in endangered language school contexts are suggested.

**Keywords:** *Twitter*, microblogging, Irish language, primary school.

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**How to cite this article:** O'Toole, J., & Devitt, A. (2022). *Twitter as a dynamic language learning platform for learners of Irish as an additional language in a primary school setting in Ireland: review and recommendations*. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouišny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 302-307). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1475>

## 1. Introduction

The Irish language is spoken by a minority of the population on a daily basis outside of education (1.7%) and is categorised as an endangered language. While the Irish immersion education (IME) sector has experienced growth and success, most children in Ireland learn IAL at English-medium schools where Irish is a compulsory and core subject. There are ongoing concerns regarding children's attainment in Irish at primary school level in English-medium education coupled with a lack of opportunity for learners to experience Irish as a living language in additional domains other than school (Harris, 2008; Inspectorate, 2022).

The potential of social media to open new digital spaces for learners and to extend language learning opportunities is well documented. A number of critical reviews and studies (Barrot, 2021; Hattem & Lomicka, 2016) identify key affordances of Twitter for language learners such as brevity of written tasks, interaction with (native) speakers, learner agency, and community building.

Digital literacies today such as social media engagement are characterised as *participative*, *multifarious*, and *everyday* (Reinhardt & Thorne, 2019) compared with more traditional digital activities involving bidirectional teacher and student exchange. Educators are encouraged to “consider involving broader audiences and purposes that would help students to engage with the world outside of the classroom” (Reinhardt & Thorne, 2019, p. 218), which resonates with the minority language context whereby social media can be harnessed to create language learning opportunities (Cunliffe, 2021).

## 2. Class Twitter account engagement

The exploration of utilising Twitter as a dynamic platform for Irish language learning forms part of a larger Irish language action research study informed by a socio-cultural theory theoretical framework, which explores Web 2.0 technology-mediated language and tutoring (peer tutoring and student-parent tutoring).

A fourth class (n=20, ten years of age approximately, ten girls and ten boys) and their parents (n=20) voluntarily took part in the school-based study as active participants in partnership with the class teacher in the role of teacher-researcher. Parents' consent and children's assent were negotiated at the outset as part of a university-approved ethics plan inclusive of secure data retention and child-

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friendly internet engagement stipulations. Three Action Cycles<sup>3</sup> took place over the course of an academic school year. The class Twitter account was introduced at the halfway point of Action Cycle 1, after peer tutoring had commenced.

A dedicated class Twitter account was set up independently of the school's communication channels and it was curated by the teacher-researcher on behalf of the class. The modelling and co-writing model of use sought to create regular, short, achievable and *everyday* (Reinhardt & Thorne, 2019) Irish language writing opportunities for the class in addition to reading authentic Irish tweets and related potential community building (Cunliffe, 2021). Parents were invited to join Twitter, follow the class account and engage with class tweets with their child as a shared Irish language activity. A class newsletter of tweets was also collated and shared periodically.

Data collection comprised of the repository of class tweets, participant advisory group discussions and questionnaires, and the teacher-researcher's reflective diary over the course of three Action Cycles.

Analysis of the class tweets focused on tweet authorship and subject content. A qualitative analysis approach was undertaken whereby a thematic analysis of advisory group discussions was triangulated with questionnaire and diary findings, and tweet analysis.

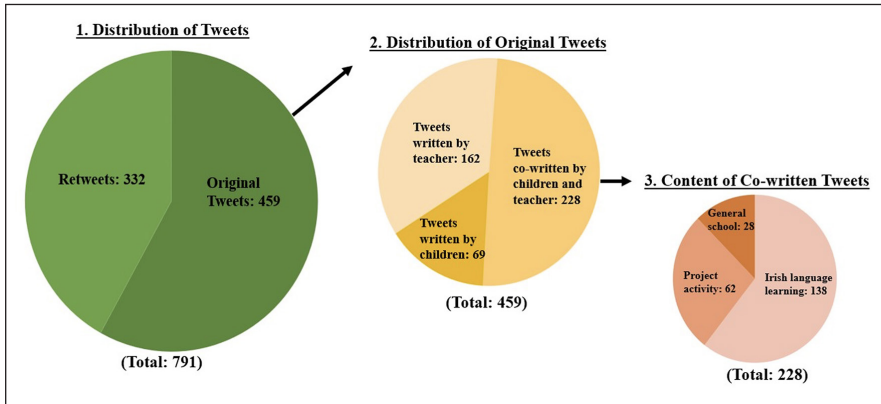
### 3. Results and discussion

Over the course of the language project, the class Twitter account produced 459 original tweets. Figure 1 illustrates the distribution of tweets and original tweets as well as the categorisation of the content of co-written tweets. The scaffolded approach to tweet writing is broadly reflected in the fact that 49.7% of original tweets were co-written by the children and teacher. Of the co-written tweets, 60% reflected the learning in Irish lessons.

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3. An Action Cycle refers to sequential informed activity carried out during a designated time characterised by the identification and/or observation of a concern, planning and implementation, review of actions and progression to a further action cycle or conclusion of project.

Figure 1. Breakdown of class tweets



An analysis of children’s questionnaires and discussions indicate that a clear majority of the class (17/18) reported enjoyment in relation to writing and reading and agreed (18/18) that Twitter was a useful tool to learn and improve one’s Irish. Two children shared awareness of the potential to connect with other Irish speakers: “I think it’s really cool to see how other people and not just in school, they are actually using Irish and, like, what they have to say in Irish” (Child 4). Five children recommended that more time be afforded to reading Irish tweets in class. Of the ten children who expressed a desire to be involved with home-based Twitter activity, one child commented: “Yeah, I never got the chance to do it at home [reading tweets] ...But I would want to do it at home” (Child 17).

In terms of parental engagement, 5/20 parents joined Twitter and followed the class account and three parents and their respective children engaged with the class account. Parents expressed their support for the role of technology, citing how the children were adept at its use. Unfamiliarity with Twitter was notable, in addition to confusion with two platforms (Twitter and Class Blog) being in use: “Well you see I didn’t know we could go on it” (Parent 1). Nevertheless, children reported notable parental engagement with the printed class newsletter of tweets.

#### 4. Conclusion

The findings suggest that the children were positively disposed towards the use of Twitter for Irish language purposes. Parents’ feedback indicates that family use of Twitter outside the classroom may have been affected by unfamiliarity with the

application and potential intervention overload. The importance of the role of the teacher as curator and facilitator also emerged.

While small-scale and context-specific, this exploratory study gives an insight to learner engagement with and experience of a social networking platform, the potential affordances of Twitter in this learning context, and the role of the teacher in engaging learners. The utilisation of Twitter as a scaffolded writing tool facilitated an agentic approach to Irish language writing, which enabled learners to engage with the language in a new and authentic domain of use (Cunliffe, 2021). The study addresses a research gap both in terms of exploring the use of social networking sites such as Twitter for language learning at primary level and in terms of the potential of such a platform in an endangered language context.

Recommendations for future implementation based on the findings are as follows.

- Utilisation of and further exploration of Twitter as a writing tool in a scaffolded capacity to engage primary school Irish language learners in realisable writing tasks.
- Introduction of Twitter to parents on a phased basis whereby sufficient time is given to explore account set up and application affordances.
- Invitation to parents to join Twitter at the latter stages of a blended language learning project when a greater connection with the overarching project aims has been established.
- Facilitation of teachers to avail of the school Twitter account for the potential piloting of language learning prior to potential establishment of a class Twitter account.

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# The use of machine translation in L2 education: Japanese university teachers' views and practices

Louise Ohashi<sup>1</sup>

**Abstract.** Machine Translation (MT) is receiving increasing attention within language education due to both its affordances and the potential it offers for academic misconduct. To understand more about teachers' views and practices, a survey was conducted with 153 foreign language (L2) educators who teach at Japanese universities. The survey examined their; (1) use of MT to assist with L2 reading, writing, speaking, and listening, both personally and in their courses; (2) views on MT in language education; and (3) knowledge of how to help students use MT effectively and their willingness to learn about this. The results indicated that most teachers supported the use of MT as a learning tool, but many had concerns over its misuse. Few felt they had enough knowledge to guide students toward effective use and the vast majority wanted to learn more about how to do so. These findings highlight a need for teacher support and underscore the necessity of more research and workplace discussions on the integration and regulation of MT within L2 education.

**Keywords:** machine translation, online translator, language learning, L2 teacher practices.

## 1. Introduction

Since the adoption of neural networks, e.g. Google in 2016 and DeepL in 2017, MT has developed dramatically with output becoming increasingly accurate. This has brought MT into a more central position in L2 education, partly due to its learning affordances (Lee, 2021) and partly because of its real and

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**How to cite this article:** Ohashi, L. (2022). The use of machine translation in L2 education: Japanese university teachers' views and practices. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 308-314). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1476>

perceived potential for misuse (Kennedy, 2022). Research has pointed toward deficiencies in teachers' awareness of student use (Alm & Watanabe, 2021), so it is important to learn more about MT from teachers' perspectives. This study aims to understand how language teachers view and use MT. Personal experiences can influence teacher cognition, so teachers' own use of MT and their integration of it into their courses were explored. The central Research Questions (RQs) are as below.

RQ1: How do language teachers use MT, both personally and in their courses?

RQ2: What are teachers' views on the use of MT in the context of L2 education?

RQ3: Do teachers feel they have enough knowledge to help students use MT effectively to develop their L2 skills or do they want to learn more about this?

## 2. Method

Data were collected through an online survey (supplementary materials) created with Testmoz. This survey targeted foreign language teachers at Japanese universities. Calls for anonymous volunteers were posted in Facebook groups for Japan-based teachers (Online Teaching Japan; JALT SIGs). The RQs were addressed through closed and Likert-scale Survey Questions (SQs). The survey also gathered background information about participants and invited them to take part in follow-up interviews for a later phase of the study. SQs were developed by the researcher and refined with feedback from two reviewers. One reviewer was selected for their expertise in MT research to increase content validity. Raw statistical data were converted to percentages for descriptive analysis.

Most of the 153 participants were L1 speakers of English (134) and Japanese (11) or both (1). There were also L1 speakers of the following languages: Indonesian, Portuguese, Italian, Urdu, Punjabi, Hindi, Filipino, Catalan, Spanish, French, German, Turkish, and Hungarian (including those with multiple L1s). Most taught English as a foreign language (147), three taught English plus another language (French, Spanish, Italian), and three taught other languages (Indonesian, Spanish, German). The majority spoke or studied L2s, with only four monolinguals.

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### 3. Results and discussion

There were 153 valid responses to the survey. All figures and tables draw on the full sample, with percentages rounded to the closest whole number.

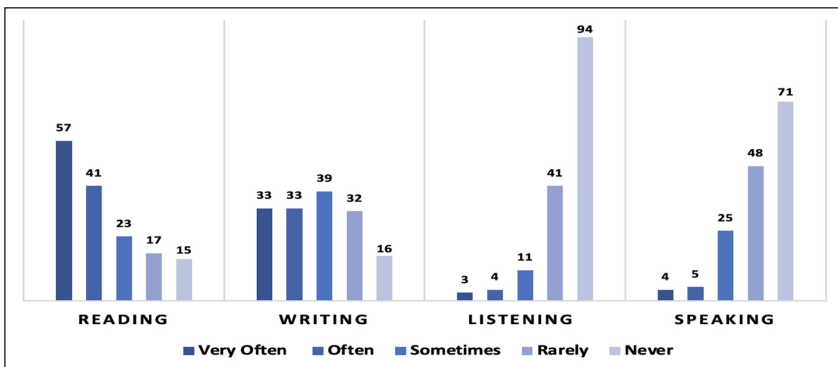
RQ1 explored how teachers use MT personally and as educators. Results showed teachers were familiar with MT through personal usage (Figure 1, SQs 5-8). Regular usage (very often/often) in their personal lives was far more common for reading 64% (98/153,) and writing 43% (66/153,) than listening 5% (7/153) and speaking 6% (9/153).

Results revealed that teachers helped students use MT to develop reading and writing skills more than listening and speaking skills (Figure 2, SQs 9-12). This reflects their own usage patterns of MT to some extent, so familiarity as users may have influenced their teaching practices. However, a comparison of Figure 1 and Figure 2 shows that teachers’ integration of MT support into language courses was much lower than their personal use.

Teachers were also asked about their experiences of discussing (un)acceptable use of MT with their students and setting usage guidelines. 21% (32/153) did it in all of their language courses, 51% (78/153) did it in some, and 28% (43/153) did not do it in any (Figure 3, SQ17).

In summary, teachers’ personal use of MT was widespread, but far fewer introduced it to students as a learning tool. Many addressed appropriate use and offered usage guidelines, but few did this in all courses.

Figure 1. Teachers’ personal use of MT in their L2s (N=153)



Note: see survey for frequency definitions

Figure 2. Teachers' MT support for students (N=153)

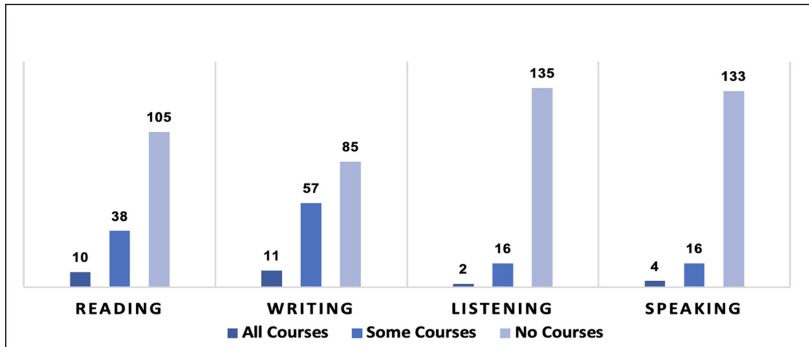
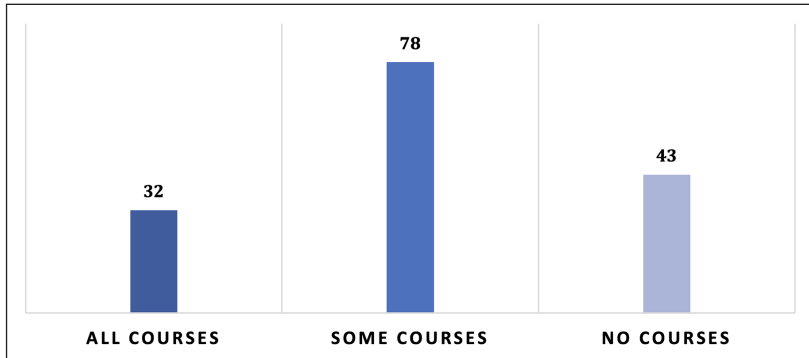


Figure 3. Level of teachers' guidance on acceptable MT usage (N=153)



RQ2 investigated teachers' views of MT in L2 education. First, the survey gauged teachers' views on MT's effectiveness as a tool for L2 skill development. Table 1 (SQs 18-21) shows that most felt it was effective (strongly agree/agree) for writing 71% (108/153) and reading 67% (102/153). Only a minority viewed it as effective (strongly agree/agree) for speaking 37% (56/153) and listening 36% (55/153).

Table 1. Perceptions of MT's effectiveness for L2 skill development

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
Writing	27% (42)	43% (66)	22% (33)	7% (11)	1% (1)
Reading	22% (34)	44% (68)	24% (36)	9% (14)	1% (1)
Speaking	4% (6)	33% (50)	43% (66)	15% (23)	5% (8)
Listening	5% (7)	31% (48)	44% (68)	14% (21)	6% (9)

Table 2 (SQs 13-14) shows teachers’ perceptions of their students’ use of MT. Most thought it was used in beneficial ways, with 71% (109/153) believing at least some students (all/most/some) used it to learn their L2. However, there was substantial concern over misuse, with 55% (84/153) believing at least some students (all/most/some) used MT to cheat. Interestingly, while 11% (17/153) felt all students used it to learn, only 1% (2/153) felt it was universally used for cheating. This suggests that teachers are certainly concerned over misuse but tend to view MT as more of a support tool than a cheating aid.

Table 2. Teachers’ perceptions of students’ use of MT

	All students	Most students	Some students	A few students	None	No thoughts
Perceptions of student use of MT for L2 learning	11% (17)	24% (36)	37% (56)	24% (36)	3% (4)	3% (4)
Perceptions of student use of MT to cheat	1% (2)	14% (21)	40% (61)	26% (40)	14% (21)	5% (8)

Despite concerns over inappropriate use, few teachers strongly agreed (1%) or agreed (16%) that MT use for coursework should be very restricted or banned (Table 3: SQ15); 20% were undecided and 62% (95/153) were in disagreement, suggesting that banning MT is not the way forward. However, most participants strongly agreed (48%) or agreed (39%) that it is essential for teachers to discuss (in)appropriate use of MT with students in all language courses and provide guidelines for acceptable use (Table 3: SQ16). This shows a willingness for educators to accept MT in L2 education provided there is guidance. Nevertheless, Figure 3 indicated only 21% of teachers actually did this in all courses, illuminating a gap between beliefs and practices that warrants further examination.

Table 3. Teachers’ perceptions on the need to restrict MT usage and provide guidelines

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
1. MT should be heavily restricted or banned	1% (2)	16% (25)	20% (31)	44% (67)	18% (28)
2. MT usage guidelines are essential in all language courses	48% (73)	39% (59)	12% (18)	2% (3)	0% (0)

RQ3 investigated teachers' knowledge of how to help students use MT to develop L2 skills and their willingness to learn about this. Table 4 (SQs 22-23) shows that only 31% (48/153, strongly agree/agree) felt they had sufficient knowledge to help students use MT effectively. The vast majority (84%, 129/153, strongly agree/agree) wanted to learn more, highlighting a need for teacher training materials and programs.

Table 4. Teachers' evaluation of their MT knowledge and willingness to learn more

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
1. Have enough knowledge to help students use MT	5% (7)	27% (41)	22% (33)	41% (62)	7% (10)
2. Want to learn more about how to help students use MT	37% (56)	48% (73)	12% (18)	3% (5)	1% (1)

## 4. Conclusions

This study indicated that teachers' personal use of MT, their beliefs on its usefulness, and integration of MT support into their courses aligned somewhat, with reading and writing ranking higher than listening and speaking in all three areas. However, teachers' inclusion of MT in their courses was more limited than their private use of these tools. There was concern over MT's potential as a cheating aid, but few teachers wanted it heavily restricted or banned. Despite widespread agreement on the necessity of discussions and guidelines for appropriate use, only a minority had addressed this in all courses. Furthermore, many felt they had insufficient knowledge to help students use MT effectively for L2 skill development, and the vast majority wanted to learn more about this. These findings signal a need for increased discussion within L2 educational settings, greater teacher awareness and support (training materials/programs), and more research in the field of MT in L2 education.

## 5. Supplementary materials

<https://research-publishing.box.com/s/hkpqr2t68z xu4qq0bqgjvblwwcr9qdh>

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# Using the bilingual Corpus of Romanian Academic Genres (ROGER) platform to improve students' academic writing

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Loredana Bercuci<sup>3</sup>, and Roxana Rogobete<sup>4</sup>

**Abstract.** Learner corpora of written texts from academic writing assignments provide a practical resource for students, particularly in fostering academic writing skills. One such corpus is the newly available ROGER (Corpus of Romanian Academic Genres), a bilingual comparable corpus containing learner discipline-specific academic writing data in Romanian native language (L1) and English as a foreign language (L2). This paper aims to illustrate a series of academic writing teaching approaches supported by the ROGER platform (launched in May 2022) to be applied by tutors in an academic writing classroom setting. The results are structured according to [Ädel's \(2010\)](#) methodological model for fostering rhetorical functions and specific phraseology in academic writing, coupled with addressing metadiscourse markers to better assist in the enhancement of students' academic writing skills at the university undergraduate level.

**Keywords:** academic writing, bilingual corpus, corpus-based teaching, learner corpora.

## 1. Introduction

While access to general and specialised corpora has improved significantly in recent years, corpus-based teaching in academic writing has yet to be exploited consistently in different student groups. One such case pertaining to teaching

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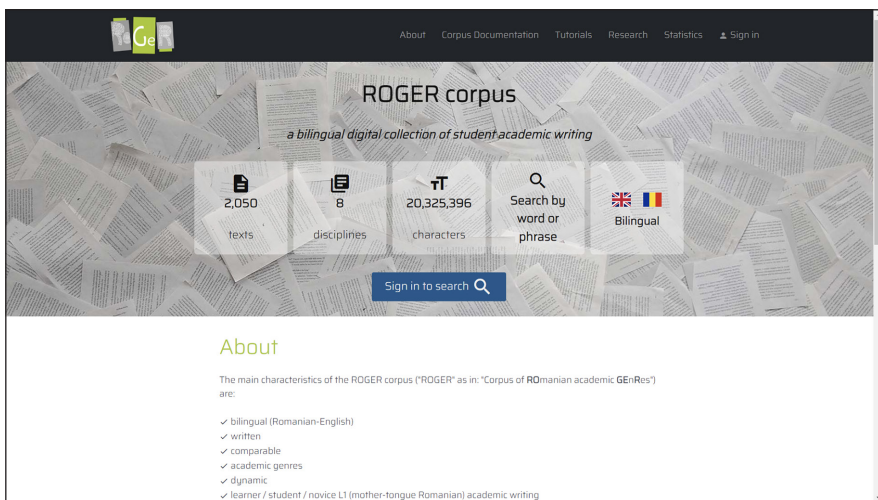
**How to cite this article:** Oravițan, A., Chitez, M., Bercuci, L., & Rogobete, R. (2022). Using the bilingual Corpus of Romanian Academic Genres (ROGER) platform to improve students' academic writing. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouëсны, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 315-321). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1477>



English for academic purposes is employing learner corpora, which directly contribute to improving second language teaching and learning through classroom use (Granger, 2002). Learner academic corpora may equally constitute a precise reference point and a practical resource for students (Timmis, 2015), particularly in the context of fostering academic writing skills. However, learner corpora of academic writing are limited in availability: they are frequently not publicly accessible due to copyright laws, commercial reasons (Nesi, 2012), or emerging data protection regulations around the world (such as the General Data Protection Regulation in the EU).

Bilingual learner corpora of academic writing are even less common, even though their added pedagogical benefit is significant. Specifically, these corpora provide students with the opportunity to discover interlanguage interference in a corpus of texts that are at the same level as their own. Previous studies (Bercuci & Chitez, 2019; Chitez & Bercuci, 2019) have shown that, in a Romanian higher education context, such corpora can be utilised as support for self-directed learning and are a source of motivation for students. As far as Romanian L1 implications are concerned, using corpora for academic writing is a complete novelty. Instruments such as academic phrase banks or academic word lists, already developed for English, are non-existent (see Rogobete, Mureșan, & Chitez, in press) because Romanian students' writing skills in L1 are taken for granted. At the same time, a marked tendency towards lingering under the influence of stereotypical language structures has been observed and demonstrated (Tucan, Pop, Bercuci, & Chitez, 2020).

Figure 1. ROGER platform interface (<https://roger-corpus.org/>)



Given the limited availability of bilingual learner corpora of academic writing, a research project was launched at the West University of Timișoara, Romania, in 2017, aiming to produce the first bilingual Romanian and English learner corpus of academic writing texts from both undergraduate and graduate students in a variety of disciplines. ROGER (Chitez et al., 2021), with a dedicated open-source query platform (Strilețchi, Chitez, & Csürös, 2022), was made available to the public in late May 2022 (Figure 1 above). This paper aims to illustrate a series of academic writing teaching approaches supported by the ROGER platform.

## 2. A methodological model

A useful methodological model of employing learner corpora to foster academic writing skills can be found in Ädel (2010), who directs attention toward rhetorical functions and specific phraseology as essential features to be mastered by novice academic writers. In what is dubbed as a ‘hands-on’ model, Ädel (2010) recommends addressing the following research questions to students using learner corpora in an academic writing classroom setting:

“What do academic writers say when they...? (a) give an example, (b) refer to other texts or researchers, (c) introduce the topic, (d) start their Conclusion section?” (p. 43).

The investigation of these questions through a learner corpus reveals hitherto unnoticed specific phrases and patterns in rhetorical functions and academic phraseology. The replication of this ‘hands-on’ model may be undertaken by employing the ROGER platform, with specific results showcasing salient dimensions of Romanian L1 and English L2 learner academic writing. Also, aside from Ädel’s model, students may discover metadiscourse markers that are erroneously used in L2 by extracting word and N-gram lists in both languages. In teaching activities, students may detect the overuse of specific metadiscourse markers by using an English L1 corpus (such as BNC, COCA, or MICUSP) as a reference point.

## 3. Results

(a) When inputting the Romanian ‘de exemplu’ (253 occurrences), one notices that the phrase may be encountered either in sentence-initial or mid-sentence positions,

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with a wide variety of punctuation patterns: while it is usually preceded by a comma or a full stop, it is followed by an array of punctuation marks, which can be used to address punctuation issues in student writing.

(b) In the case of referring to other texts, materials, or researchers, the parallel querying of the corpus with the study level filter at the undergraduate level showcases significant differences which can be exploited pedagogically (Table 1).

Table 1. Examples of in-text referencing from the ROGER corpus

RO	BA SY 1	BA SY 2	BA SY 3	EN	BA SY 1	BA SY 2	BA SY 3
potrivit lui	3	0	2	according to	93	61	42
conform lui	8	0	4				
afirm* că	34	4	40	state* that	27	20	28
consideră că	34	3	31	considers that	4	7	4
prezentat* în	8	1	18	present* in	23	38	35
menționat* în	2	1	5	mention* in	8	15	25
preluat* din	2	1	5	quoted in	0	1	2
citat* în / din	0	0	0	cited in	0	3	3

(c) The introduction to any academic paper highlights several phrases which can be elicited by students, particularly in connection to the thesis statement. Thus, students may be asked to predict patterns headed by ‘this paper \*’ for English and ‘această lucrare’ for Romanian, and to compare and contrast their examples with concordance lines obtained when querying the corpus (Figure 2 below).

(d) As concerns the insights that students might gain from how academic writers start their conclusion section, the querying of the keywords ‘concluzie’ for Romanian (271 occurrences) and ‘conclusion’ for English (511 occurrences) illustrates that both of these structures are usually preceded by a preposition or preposition plus article combination (‘în’/‘ca o’ for Romanian, ‘in’/‘as a’ for English), followed by a comma and a summarising/concluding statement.

In the case of metadiscourse markers, a persistent structure used in Romanian academic writing is ‘din punct de vedere’. In the ROGER corpus, the phrase appears 20 times both in Romanian and in English. However, in English L2, the phrase ‘point of view’ is often overused in the following configuration: ‘from a \* point of view’ by Romanian native speakers.

Figure 2. Search results for ‘this paper’ (EN) and ‘această lucrare’ (RO) in the ROGER corpus

### Search results

Texts displayed on page: 1 - 20 / 123

- 1 *Language:* English | *Genre:* Essay | *Discipline:* Humanities (HUM) | *Study level:* Master | *Study year:* 1  
this paper=>... including both specialists and common people. In **this paper**, I will try to look at the impact that immigration... [show more]
- 2 *Language:* English | *Genre:* Essay | *Discipline:* Humanities (HUM) | *Study level:* Master | *Study year:* 1  
this paper=>... are race neutral(). Given the context, the aim of **this paper** is to provide a description of how this... [show more]
- 3 *Language:* English | *Genre:* Essay | *Discipline:* Humanities (HUM) | *Study level:* Master | *Study year:* 1  
this paper=>... discussed in the modern times. Therefore, the aim of **this paper** is to show that, despite its theoretical... [show more]
- 4 *Language:* English | *Genre:* Essay | *Discipline:* Humanities (HUM) | *Study level:* Master | *Study year:* 2  
This paper=>... through her perspective as a young Southern girl. **This paper** focuses on discussing To Kill a Mockingbird... [show more]
- 5 *Language:* English | *Genre:* Essay | *Discipline:* Humanities (HUM) | *Study level:* Master | *Study year:* 1  
this paper=>... opportunity and reverse discrimination The purpose of **this paper** is to study how the use of race conscious... [show more]
- 6 *Language:* English | *Genre:* Thesis (Bachelor) | *Discipline:* Humanities (HUM) | *Study level:* Master | *Study year:* 1  
this paper=>... framework that I will be making use of throughout **this paper**. As already stated above, my purpose is... [show more]
- 7 *Language:* English | *Genre:* Thesis (Master) | *Discipline:* Computer Science (COMP) | *Study level:* Master | *Study year:* Unknown  
this paper=>... ones retrieved online are appropriately cited in **this paper**, respecting the rules of avoiding Copyright... [show more]

### Search results

Texts displayed on page: 1 - 20 / 54

- 1 *Language:* Romanian | *Genre:* Portfolio | *Discipline:* Political Sciences (POL) | *Study level:* Bachelor | *Study year:* 3  
Această lucrare=>... non-profit NRDC (Natural Resources Defense Council). **Această lucrare** artistică publicitară a lor... [show more]
- 2 *Language:* Romanian | *Genre:* Thesis (Bachelor) | *Discipline:* Political Sciences (POL) | *Study level:* Bachelor | *Study year:* 3  
această lucrare=>... studiu. Finele încheag informațiile redactate în **această lucrare** printr-o concluzie cu referire... [show more]
- 3 *Language:* Romanian | *Genre:* Thesis (Bachelor) | *Discipline:* Political Sciences (POL) | *Study level:* Bachelor | *Study year:* 3  
Această lucrare=>... PUBLICITATEA LA PRODUSELE DE LUX ABSOLVENT.; INTRODUCERE **Această lucrare** are ca temă Forme ale... [show more]
- 4 *Language:* Romanian | *Genre:* Thesis (Bachelor) | *Discipline:* Humanities (HUM) | *Study level:* Bachelor | *Study year:* 3  
această lucrare=>... ESTETICA RENAȘTERII ABSOLVENT.; INTRODUCERE în **această lucrare** voi vorbi despre categoria estetică... [show more]
- 5 *Language:* Romanian | *Genre:* Thesis (Bachelor) | *Discipline:* Political Sciences (POL) | *Study level:* Bachelor | *Study year:* 3  
această lucrare=>... operaționare în instituție. Cred cu tărie că **această lucrare** de licență mi-a fost de ajutor... [show more]
- 6 *Language:* Romanian | *Genre:* Thesis (Bachelor) | *Discipline:* Political Sciences (POL) | *Study level:* Bachelor | *Study year:* 3  
această lucrare=>... de trecut. Obiectivul studiului de caz abordat în **această lucrare** de licență este acela de a evidenția... [show more]
- 7 *Language:* Romanian | *Genre:* Referat | *Discipline:* Political Sciences (POL) | *Study level:* Bachelor | *Study year:* 3  
această lucrare=>... publicului specialist, cât și a publicului general. În **această lucrare** îmi propun să descriu imaginile... [show more]

## 4. Discussion and conclusion

The approaches presented in this short paper illustrate how the ROGER platform becomes an important resource for showcasing key academic phraseology in authentic bilingual contexts. Thus, valuable insights may be gained regarding

punctuation errors in (a) and (d), cases of cross-contamination (such as ‘consideră că’ – ‘considers that’ and ‘prezentat\* în’ – ‘present\* in’), which may be studied separately, but also situations that could be approached in individual concordance lines to observe citation and acknowledgement practices (b), or frequent action verbs and patterns in use when writing thesis statements (c).

The results are structured according to Ädel’s (2010) methodological model for fostering rhetorical functions and specific phraseology in academic writing and suggest adding another function addressing metadiscourse markers to better assist with enhancing undergraduate university students’ academic writing skills. In sum, we recommend the use of bilingual learner corpora as a tool for improving and enhancing academic writing skills, thus building a legitimate contrastive pedagogical model.

## 5. Acknowledgements

This research is financially supported through a grant awarded to Dr Mădălina Chitez by the Swiss National Science Foundation, in the frame of the programme PROMYS, for a period of five years (2017-2022).

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# Pronunciation practice in Google Translate: focus on French liaison

Kevin Papin<sup>1</sup> and Walcir Cardoso<sup>2</sup>

**Abstract.** This paper examines the impact of self-directed pronunciation practice using *Google Translate* (GT) on the acquisition of French liaison (the production of latent consonants when they appear in consonant-vowel contexts across words: /z/ in *le/za/mis* ‘the friends’). Second-language (L2) French learners completed homework activities on GT to practice pronunciation, utilizing the tool’s Text-To-Speech (TTS) and Automatic Speech Recognition (ASR) capabilities. Using a pretest/posttest design, the acquisition of liaison was assessed in terms of phonological awareness, perception, and production. The results indicated that while the L2 French learners significantly improved in their ability to *produce* liaison, their awareness and perception were not affected due to ceiling effects. Overall, learners reported positive views of their GT-based, self-directed learning experience.

**Keywords:** Google Translate, automatic speech recognition, text-to-speech synthesis, L2 pronunciation.

## 1. Introduction

Speech technologies have been under increasing scrutiny from Computer Assisted Language Learning (CALL) researchers, particularly for their potential to aid pronunciation instruction (Derwing, Munro, & Thomson, 2022). In CALL, TTS synthesizers and automatic ASR have been incorporated into L2 pronunciation teaching to provide machine-generated models to learners, who can then practice their pronunciation by having the software detect their speech and convert it to text (Cardoso, 2018). While empirical research suggests that the use of TTS and

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**How to cite this article:** Papin, K., & Cardoso, W. (2022). Pronunciation practice in Google Translate: focus on French liaison. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 322-327). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1478>

ASR can support L2 pronunciation development in English (e.g. [Cardoso, 2018](#); [McCrocklin, 2016](#)), only a handful of studies have targeted L2 French ([Liakin, Cardoso, & Liakina, 2017](#)). Moreover, two studies have examined the benefits of combining TTS and ASR in a single learning experience ([He & Cardoso, 2021](#); [van Lieshout & Cardoso, 2022](#)). GT is one application in which these speech capabilities can be explored for pronunciation instruction.

To examine the use of GT and its built-in speech capabilities for teacher-guided but autonomous pronunciation instruction, we focused on the acquisition of a phonological feature of French: the liaison, or the re-syllabification of latent consonants when they appear in consonant plus vowel contexts (e.g. compare /z/ in liaised 'le/z/ amis' [le.za.mi] 'the friends' with non-liaised 'le/z/ livres' [le.li.vr] 'the books'). This mixed-method study addressed two Research Questions (RQs).

RQ1: Does the pedagogical use of GT's speech features (TTS, ASR) as part of a homework assignment assist in the learning of French liaison?

RQ2: What are the L2 learners' views on the proposed GT-based pronunciation practice?

## 2. Method

Twenty adult L2 French learners (beginners) participated in this case study. Adopting a perspective to L2 research that reflects 'pedagogical realities' ([Erlam & Tolosam, 2022](#)), participants were asked to complete a self-directed pronunciation practice using TTS and ASR in GT as part of a one-hour homework activity. The activity targeted French liaison, a phonological phenomenon that poses difficulty to beginner learners, and consisted of three learner-paced components. First, learners were asked to copy-and-paste 13 sentences containing liaisons in GT by pressing the speaker button (TTS) to listen to the synthesized voice (1 in [Figure 1](#)). Second, learners were instructed to click on GT's microphone to orally produce the same sentences for ASR conversion to text (2 in [Figure 1](#) below).

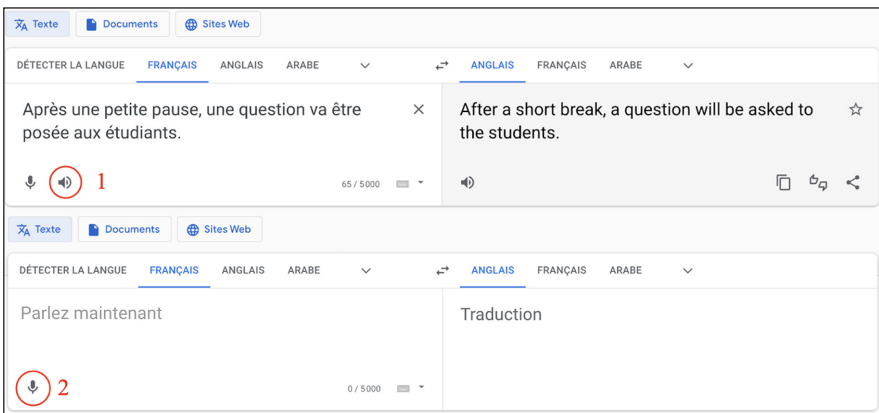
To measure the impact of the homework practice on the participants' learning of liaison (RQ1), a pretest was administered before the GT practice, which was followed by immediate and delayed (two weeks later) posttests. These online

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tests included multiple-choice questions based on audio recordings, and the learners' audio recordings of target phrases containing the liaison. Participants' phonological development was assessed across three levels of analysis, following [Celce-Murcia, Brinton, and Goodwin's \(2010\)](#) framework for pronunciation instruction: phonological awareness (e.g. *Are [target sentences] pronounced the same? Describe*), perception (e.g. *Listen and check if you hear an example of 'liaison' or 'no liaison'*), and production (e.g. *Read aloud sentences [containing liaison]*). A focus group discussion was also held among four participants to gain insights into their views (RQ2) of the proposed pedagogical experience (e.g. *Do you feel your French pronunciation improved using GT?*).

Figure 1. Homework activity sample: GT interface



### 3. Results

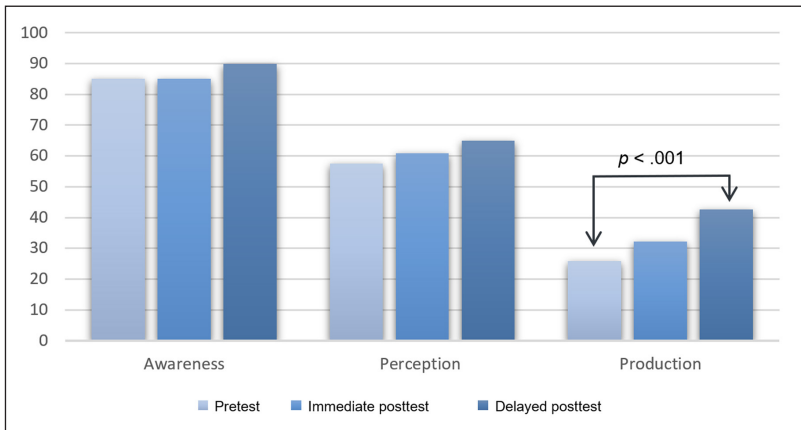
#### 3.1. Learning gains

No significant changes were observed for awareness,  $F(2, 38) = .95, p = .621$ , partial  $\eta^2 = .03$ , or perception,  $F(2, 38) = 2.26, p = .20$ , partial  $\eta^2 = .11$ . However, the proposed intervention led to statistically significant changes in production over time,  $F(2, 38) = 11.40, p < .001$ , partial  $\eta^2 = .38$ . Post hoc analysis with a Bonferroni adjustment was conducted, showing a significant increase between the mean scores on the pretest and delayed posttest,  $3.04, (95\% \text{ CI}, 1.72 \text{ to } 4.36), p < .001, d = 1.35$ . [Table 1](#) reports the evolution of test scores between the pretest and the two posttests, while [Figure 2](#) provides a visual representation of these results, emphasizing the significant values obtained for production.

Table 1. Test scores: French liaison

	Pretest		Immediate posttest		Delayed posttest	
	M	SD	M	SD	M	SD
Awareness (/3)	2.55	0.61	2.55	0.51	2.70	0.47
Perception (/16)	9.20	2.35	9.75	1.94	10.40	1.96
Production (/18)	4.64	3.42	5.78	3.73	7.68	3.88

Figure 2. Production scores (converted to %): French liaison



### 3.2. Learners' views

Content analysis of the focus group interview indicated that interviewees found their experience ‘very useful’ overall. Two learners explained that the homework activity ‘helped [them] pay more attention’ to the liaison and ‘raise [their] awareness’ to this phonological feature. GT was perceived as a ‘robust tool’ for L2 pronunciation learning, as the TTS feature can be used to easily check ‘how to pronounce’ words. Participants felt that the ASR feature has the potential to help them to self-correct, as ‘pronunciation must be perfect’ to be properly detected by the ASR. Regarding the drawbacks of the experience, two learners found it ‘annoying’ and ‘discouraging’ when the ASR could not detect their speech. This sparked comments such as ‘I honestly don’t plan to [dictate to GT]’ and it is ‘so more useful for GT to be reading things to me [than me speaking to it]’. After this self-directed pronunciation practice, learners reported they felt encouraged to continue to employ the newly acquired pronunciation learning strategies in their own learning (e.g. to check pronunciation using TTS). However, they did not fully value the pedagogical use of the tool’s ASR capability, despite the learning gains described earlier.

## 4. Discussion and conclusions

This paper provided initial empirical evidence that the pedagogical use of GT's speech features (TTS and ASR) can support the development of liaison in L2 French (RQ1). While the proposed intervention led to a statistically significant improvement on the production of liaison, it had no impact on awareness and perception. This could be attributed to a ceiling effect in both awareness and perception, as the learners already had advanced knowledge of liaison before the experiment (2.55/3 and 9.2/16 on the pretest respectively, leaving little room for improvement), compared to production (4.64/18 on the pretest). These results are in line with the predictions embedded in [Celce-Murcia et al.'s \(2010\)](#) framework for teaching pronunciation, which posits that L2 phonological features should be taught in the order in which they are acquired, starting with the development of phonological awareness, then progressing toward perception and production. Due to the initial level of liaison knowledge of our participants in awareness and perception, it is not surprising that the proposed treatment only affected their production. Teachers willing to integrate GT to their pronunciation teaching should therefore be mindful of their students' initial phonological knowledge and use GT to target the stage(s) that need(s) improvement.

Due to the naturalistic and self-regulated setting adopted in this study, some external variables might have negatively affected the participants' performance in completing the activities (e.g. internet connection speed, ambient noise at home). The limited number of participants and the fact that this study was based on a one-time intervention should also be acknowledged as a limitation. However, this is also one of the strengths of our study, which constitutes a 'pedagogical reality' ([Erlam & Tolosam, 2022](#)) with ecological validity, involving an activity that is common among L2 learners: the completion of out-of-class, teacher-guided, self-regulated homework assignments. Future studies should examine the impact of GT-based pronunciation practice on the development of different phonological features of French (and other languages) and explore learner-GT interactions to examine behavior-effect relations.

## 5. Acknowledgments

We acknowledge financial support from the *Social Science and Humanities Research Council* (Canada) to Papin (430-2022-00846) and Cardoso (430-2022-00512), and the invaluable assistance of Carol Johnson (statistical analysis).

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# Enhancing EFL classroom instruction via the FeedBook: effects on language development and communicative language use

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Lisa Middelanis<sup>4</sup>, and Detmar Meurers<sup>5</sup>

**Abstract.** The present exploratory study investigated the efficacy of secondary face-to-face classroom-based English as a Foreign Language (EFL) instruction digitally supported by the FeedBook, an interactive computer assisted language learning web-based suite of exercises providing item-level scaffolded feedback. Seventy-seven native (L1) German seventh-grade students used the FeedBook during four two-week training periods (cycles, here we analyse Cycle 2 and 3). Classroom and FeedBook practice occurred in parallel, except for grammar constructions for which only FeedBook practice was provided (controls). At the end of Cycle 3, students engaged in a classroom-based communicative task for which the practised constructions were relevant. Custom-designed pre- and post-tests, administered via the FeedBook, assessed language accuracy in each cycle. Mixed-effect models revealed significant pre-/post-test accuracy gains independent of the learners' proficiency in English, but not in controls. Gains from digitally supported instruction were also positively related to accurate use of EFL grammar constructions in the communicative task. Overall, the results indicate learning benefits for face-to-face classroom-based instruction supported by the FeedBook, evidenced both in grammar tests and in communicative activities.

**Keywords:** digital EFL learning, linguistic skill transfer, ICALL feedback, communicative language teaching.

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**How to cite this article:** Pili-Moss, D., Schmidt, T., Blume, C., Middelanis, L., & Meurers, D. (2022). Enhancing EFL classroom instruction via the FeedBook: effects on language development and communicative language use. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 328-333). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1479>

## 1. Introduction

A large body of classroom-based research, both paper-based and digital, has highlighted the key role of practice in foreign language (L2) learning (DeKeyser, 2015; Pili-Moss, Brill-Schuetz, Faretta-Stutenberg, & Morgan-Short, 2020). In the present study, classroom-based instruction and practice inspired by task-based language teaching principles were combined with digital practice via the FeedBook, a web-based workbook providing scaffolded interactive feedback on linguistic forms and meaning. We will refer to such face-to-face classroom instruction complemented by individual practice using digital tools as ‘hybrid’ instruction.

The FeedBook is fully integrated with the curriculum and covers different grammar foci, vocabulary, different language skill areas (listening comprehension, reading comprehension), and exercise types (Meurers et al., 2019, pp. 164-165). Consistent with research findings highlighting the potential efficacy of digitally-mediated EFL instruction (Chong & Reinders, 2020; Schmidt & Strasser, 2022), previous FeedBook studies employing a pre-/post-test design have also found that the use of the platform contributed to a significant increase in language accuracy based on results from the post-tests, particularly when feedback was provided (Meurers et al., 2019).

Building on these findings, we not only looked at the efficacy of hybrid instruction as measured in post-test accuracy gains, but also explored relationships between test outcomes and proficient use of L2 English grammar constructions in a communicative task (i.e. a task designed to create communication conditions similar to those in immersive contexts) performed at the end of the instruction cycle. The research questions were formulated as follows.

RQ1. To what extent is face-to-face classroom instruction complemented by individual classroom-based practice using digital tools (i.e. hybrid instruction) related to significant language accuracy gains?

RQ2. Are there any benefits for digital practice alone?

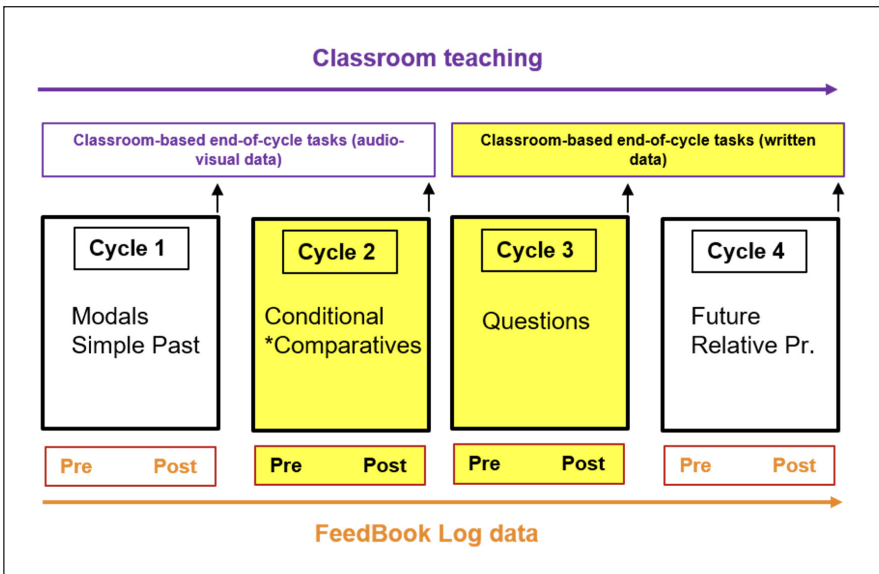
RQ3. To what extent are language accuracy gains in hybrid instruction related to accurate use of grammar constructions in face-to-face classroom-based communicative activities?

## 2. Methods

### 2.1. Participants and study design

Seventy-seven seventh graders (level A2 of the CEFR; native German learners of L2 English; 41 females, 36 males; three intact classes) from one inner-city secondary school in Northern Germany participated in the study. Data were collected over the course of a school year from September 2021 to June 2022, during which students received regular classroom-based EFL instruction in English (three 45-minute classes a week). Students additionally engaged in individual classroom-based grammar practice through the FeedBook (Meurers et al., 2019), a web-based workbook providing a suite of grammar exercises with scaffolded interactive feedback on linguistic forms and meaning, over four two-week practice cycles (about 2.5 hours per week) focusing on a set of grammar constructions (Figure 1).

Figure 1. Overall study design with data subset analysed in the present study (yellow)



For the purposes of the present study, only pre-/post-test data from Cycle 2 (conditionals and comparatives) and Cycle 3 (direct questions) were used, as well as data from the written task at the end of Cycle 3 (supplementary materials S1).

## 2.2. Measures and data analysis

At the beginning and at the end of each cycle, students completed custom-designed pre- and post-tests administered via the FeedBook (30 fill-in-the-gap sentences each) assessing accuracy in the relevant grammar constructions. In Cycle 2, one construction (conditionals) was taught and practised face-to-face in the classroom, as well as practised on the FeedBook, whereas the other (comparatives) was only practised on the FeedBook. Language proficiency in the written task at the end of Cycle 3 was measured by creating a composite index obtained by standardising and averaging four components: (1) number of questions produced, (2) number of correct questions using the past tense, (3) number of correct questions using the *do/does/did* auxiliaries, and (4) number of incorrect questions (a negative index). The main inferential analysis employed mixed-effects models controlling for random effects of participants, test items, and the class group the students belonged to on intercepts, as well as multiple regression. A two-level categorical variable identifying test type (pre-test/post-test) was the main predictor, whereas students' L2 English proficiency was used as a covariate in all analyses. Descriptive statistics relative to test scores in Cycle 2 and 3 are reported in Table S2.1a (supplementary materials S2), whereas Table S2.1b reports students' mean scores in English and proficiency in the Cycle 3 target task.

## 3. Results

To answer RQ1 and RQ2, data from Cycle 2 were analysed to explore pre-/post-test accuracy gains in three different cases: overall for Cycle 2 (Table S2.2, supplementary materials S2), only for items testing the conditional tense, and only for test items testing the comparative (Table 1). To answer RQ3, a regression model was used with accuracy gains in Cycle 3 as a main predictor and proficiency in English questions in the classroom-based task as the outcome variable (Table S2.3; supplementary materials S2).

Table 1. Pre-/post-test accuracy models: C2 conditional and C2 comparative

					Wald CI (95%)		
	Fixed effects	$\beta$	SE	z	lower	upper	p
Conditional <sup>o</sup>	(Intercept)	0.89	0.41	2.16	0.83	1.71	.031*
	Pre-test	-1.37	0.30	-4.48	-1.95	-0.76	<.001***
	Eng_Prof	-0.45	0.12	-3.79	-0.68	-0.22	<.001***



Comparative+	(Intercept)	2.08	0.88	2.35	0.34	3.81	.019*
	Pre-test	-1.40	0.85	-1.65	-3.06	0.26	.099
	Eng_Prof	-0.84	0.22	-3.87	-1.26	-0.41	<.001***

Note. \* $p < .05$ ; \*\*\* $p < .001$ . ° $N$  of observations=2,826. + $N$  of observations=1,352.

## 4. Discussion and conclusion

The first two research questions asked to what extent classroom-based, face-to-face instruction that is supported by the FeedBook is related to a positive development in EFL language outcomes (RQ1), and whether accuracy gains also emerge for grammar constructions for which only FeedBook practice was provided (RQ2). The analysis showed that for both overall C2 scores and for items testing the conditional alone, post-test scores were significantly higher than pre-test scores. Furthermore, these results were obtained after controlling for differences in L2 English proficiency. This indicates robust positive effects of the combination of classroom-based, face-to-face instruction and FeedBook practice for all students, independent of ability.

The second linguistic target covered in Cycle 2 (comparatives) was practised only digitally on the FeedBook. In this case, the analysis (Table 1) showed that pre-/post-test gains did not emerge as statistically significant, when controlled for English proficiency. This suggests that English proficiency was the main factor driving accuracy in this case, rather than an effect of stand-alone digital instruction. Note that this was the case although the time dedicated to FeedBook practice was substantial and exceeded the time spent in face-to-face instruction.

The third research question explored the relationship between language accuracy gains in questions (Cycle 3) and accurate use of questions in a written classroom-based communicative task. The results of a regression model (Table S2.3; supplementary materials S2) show that stronger improvements in the accuracy of questions in tests were significantly related to a greater ability to apply the acquired knowledge in communicative tasks, and that the relationship obtained was independent of the students' proficiency in English.

Overall, our findings highlight clear positive advantages for the combination of traditional, classroom-based face-to-face instruction with classroom-based individual practice using digital tools, which did not emerge if the latter was not aligned with curriculum topics covered face-to-face in the classroom.

Moreover, the benefits emerged for all pupils independent of their proficiency in L2 English, suggesting that integrating classroom-based face-to-face instruction with classroom-based individual digital practice has the potential to become an inclusive educational strategy which may prove particularly effective with mixed-ability groups.

## 5. Supplementary materials

S1: <https://research-publishing.box.com/s/5i0y6xrllk3r5e6y3p4mfmxp5irpxpcw>

S2: <https://research-publishing.box.com/s/qetzwb74y7w8k3noyxpn80i5z3pi6hf>

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# Computer-assisted pronunciation training in Icelandic (CAPTinI): developing a method for quantifying mispronunciation in L2 speech

Catlin Richter<sup>1</sup>, Branislav Bédi<sup>2</sup>,  
Ragnar Pálsson<sup>3</sup>, and Jón Guðnason<sup>4</sup>

**Abstract.** We are developing a Computer-Assisted Pronunciation Training (CAPT) system for learners of Icelandic as a second and foreign language (L2). Based on pre-designed tasks in pronunciation exercises, this system will provide corrective feedback on learners' speech. One of the main features we are implementing is a new method for automatic pronunciation scoring to provide immediate feedback on learners' errors. We report promising results for a pilot study of this method in Norwegian, where the pronunciation score successfully distinguishes between native speakers and adult learners, and we discuss how this method informs our continued development of Icelandic CAPT.

**Keywords:** pronunciation training, computer-assisted pronunciation training, speech error detection, pronunciation scoring, Icelandic as a second or foreign language.

## 1. Introduction

Currently, there are no mobile applications, websites, or other online tools on the market that enable learners of L2 Icelandic to practise real speaking skills. According to a recent review of online tools for L2 Icelandic, there are about 15 tools offering pronunciation exercises or theoretical explanations about pronunciation to learners (Bédi, 2022). The available online tools that aim to help

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**How to cite this article:** Richter, C., Bédi, B., Pálsson, R., & Guðnason, J. (2022). Computer-assisted pronunciation training in Icelandic (CAPTinI): developing a method for quantifying mispronunciation in L2 speech. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 334-339). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1480>

learners with practising spoken Icelandic offer only pre-recorded sounds of letters, words, phrases, or shorter texts with full sentences which learners can listen to and, if they wish, repeat aloud. As a result, no corrective feedback about learners' mispronunciation is provided.

However, current technology for delivering such feedback has unsatisfactory performance, even in the most commonly taught L2s such as English. Using state-of-the-art methods to detect L2 pronunciation errors, only six of ten identified 'errors' were actually mispronounced (i.e. 60% precision), while just 40% to 80% of incorrect pronunciations are detected (i.e. recall; [Korzekwa, Lorenzo-Trueba, Drugman, & Kostek, 2022](#)). Furthermore, these technologies depend on excellent Automatic Speech Recognition (ASR) or Text-To-Speech (TTS) support for the target language, so performance grows even worse in languages without highly developed ASR or TTS.

Therefore, high-quality automatic pronunciation feedback for Icelandic must be created. This article presents development towards a system for CAPT in Icelandic (CAPTinI) that will deliver such feedback to learners, including a method to immediately detect mispronounced parts of learners' productions, and an initial evaluation of this method in a related language.

## 2. CAPT design

The CAPTinI system is applied as part of a series of lessons which give the learners practice with selected examples of vowels, consonants, words, phrases, and sentences. As such, the system simulates a classroom setting although only virtually, and corresponds with [Crabbe's \(2003\)](#) learning-opportunity framework, which includes elements of comprehensible input and output, interaction exercises, feedback, and rehearsal opportunities, all of which lead to language understanding and possibly learning. The lesson content and sequencing coordinate with the course design of *Icelandic Online*, a freely available web-based course series developed by the University of Iceland and launched in 2004, which has about 80,000 active users ([Arnbjörnsdóttir, Friðriksdóttir, & Bédi, 2020](#)). In our interactive pronunciation exercises, learners at different levels may listen to correct pronunciations and repeat them, or attempt to read text aloud without errors, and in either case continue practising with feedback after each attempt until they achieve accurate pronunciation. We first used Norwegian learners' speech to validate the method for detecting pronunciation accuracy, and it will be integrated with CAPTinI later.

### 3. Scoring method

We propose the *RelativeDTW* method of scoring pronunciation accuracy, using Dynamic Time Warping (DTW) to quantify how closely learners’ speech matches both native (L1) and other L2 speakers. DTW measures similarity between samples of speech by aligning and comparing corresponding elements. It accurately quantifies L2 accent strength by comparing L2 speakers with a set of L1 (‘reference’) speakers. DTW has previously been applied in different ways for other CAPT systems (Bartelds, Richter, Liberman, & Wieling, 2020; Yue et al., 2017) and therefore is suitable here.

To help factor out confounds, *RelativeDTW* also compares the learner’s pronunciation to a set of L2 references and determines pronunciation accuracy by a difference-to-sum ratio of the two DTW scores (Figure 1). This reflects the observation that accurate pronunciations are relatively closer to L1 than L2 pronunciations, regardless of absolute DTW values, so the ratio facilitates consistent mispronunciation detection across learners. Similar two-way comparisons are often beneficial for CAPT (Fu, Chiba, Nose, & Ito, 2020; Jia et al., 2014).

Figure 1. Equation for *RelativeDTW* score: the difference-to-sum ratio of DTW values from L2 and L1 speakers’ reference recordings

$$RelativeDTW = \frac{DTWL2 - DTWL1}{DTWL2 + DTWL1}$$

### 4. Experiment and results

Since DTW is comparative, evaluating a learner’s utterance requires reference recordings of other speakers saying the same sounds or words. While data collection for these Icelandic recordings is still in progress, we performed a pilot study validating the method in Norwegian using the NB Tale corpus<sup>5</sup>, which includes 240 Norwegian L1 speakers representing maximum dialect diversity and 117 L2 speakers from various backgrounds.

*RelativeDTW* is evaluated on ability to distinguish between native and non-native speakers’ pronunciations, so the overlapping coefficient (OVL) of score

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5. NB Tale – Speech Database for Norwegian <https://www.nb.no/sprakbanken/en/resource-catalogue/oai-nb-no-sbr-31/>

distributions for L1 versus L2 test recordings expresses the method’s effectiveness. To estimate practical utility, we also report recall for detecting L2 speech with the score threshold set to correctly accept at least 95% of L1 speech. As a baseline we evaluate the method of [Bartelds et al. \(2020\)](#), measuring DTW distance to L1 references only, using wav2vec-2.0 speech representations for all evaluations.

Results in [Table 1](#) show that L1 and L2 speakers receive quite different pronunciation scores from our method; some individual L2 phonetic segments are indistinguishable from L1 speakers’, but errors contribute to overall non-native-like accents in longer speech. In all cases, *RelativeDTW* outperforms the baseline.

Table 1. Evaluation of how effectively our *RelativeDTW* score and the [Bartelds et al. \(2020\)](#) baseline distinguish L1 and L2 speakers in the NB Tale corpus

	Overlap		L2 recall at 95% L1 acceptance	
	RelativeDTW	Baseline	RelativeDTW	Baseline
Sentences	0.10	0.33	97%	68%
Words	0.34	0.62	63%	30%
Phonemes	0.45	0.76	46%	17%

## 5. Discussion and conclusions

The *RelativeDTW* difference ratio is sensitive to non-native-like pronunciations of L2 speakers, without rejecting valid L1 variation, and it performs better than the [Bartelds et al. \(2020\)](#) baseline. Although our task of classifying L2 but not L1 speakers as ‘non-native-like’ is not directly comparable to other previous work (e.g. [Korzekwa et al., 2022](#)), we can report 90% precision with 46% recall for phonemes, or 93% precision with 63% recall for words, i.e. 63% of non-native Norwegian speakers’ words were identified as sounding non-native-like while under one in ten of so-called ‘mispronunciations’ were native speakers. These results use 25-speaker reference sets, but even reduction to three speakers identified mispronunciations in 28% of L2 words (OVL=0.54).

The NB Tale speech database provides a challenging first test for *RelativeDTW*, because these Norwegian learners are already advanced and fluent while the native speakers’ dialects are highly diverse. Icelandic contains far less dialect variation, and CAPTinI is integrated with lessons for less advanced learners, so these pilot results provide assurance that *RelativeDTW* should perform well in Icelandic once we complete data collection. The requirement for reference recordings, and

consequent impossibility of scoring spontaneous speech, is a main limitation of this method. However, no other corpora in the target language are needed, so it is feasible even for languages with limited existing speech technology. Other pronunciation scoring methods are more flexible at the cost of needing hundreds of hours of training data or specialist annotation (Korzekwa et al., 2022).

Currently, we have begun implementing scoring for a selection of Icelandic pronunciation exercises, and will continue development and evaluation with this new dataset. We are collecting more Icelandic recordings through the *Samrómur* platform, the main speech data gathering platform for Icelandic language technology. Across all projects, 4,000 hours of speech from nearly 30,000 L1 and L2 Icelandic speakers have been collected so far. Our preliminary results using Norwegian samples promise a positive language-learning experience in CAPTiN for improving learners' pronunciation in L2 Icelandic.

## 6. Acknowledgements

We thank our colleagues in developing the Icelandic pronunciation training lessons: Eydís Huld Magnúsdóttir, Júlíus Reynald Björnsson, Kolbrún Friðriksdóttir, Marc Daníel Skipstað Volhardt, Róbert Kjaran, Safa Jemai, and Staffan Hedström. This project was funded by the Language Technology Programme for Icelandic 2019-2023.

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# Exploring the impact of a group dynamics training activity on learner engagement during online classes of French as a foreign language

Ana Rosso<sup>1</sup>, Jackie Robbins<sup>2</sup>, and Christine Appel<sup>3</sup>

**Abstract.** This paper focuses on the impact of introducing a Group Dynamics Training Activity (GDTA) on learners' reported engagement during the course. The context is a university Common European Framework of Reference for languages (CEFR) B2 French language online course over the course of two semesters. Data was collected in the form of online surveys during the semester prior to the introduction of the GDTA and during the semester when it was administered. This case study uses quantitative analysis of Likert-scale question responses and qualitative analysis of open fields in the questionnaires using a content analysis methodology. Results indicate that the GDTA had a positive impact on learners, particularly on the social and cognitive dimension of learner engagement.

**Keywords:** collaboration, engagement, affective, cognitive, social, online.

## 1. Introduction

The Centre for Modern Languages (CIM) at the Open University of Catalonia offers fully online language courses. Learners work in virtual classrooms where they interact with their teacher and peers. The methodology is task-based learning and includes collaborative work, a compulsory element of the course's continuous evaluation.

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**How to cite this article:** Rosso, A., Robbins, J., & Appel, C. (2022). Exploring the impact of a group dynamics training activity on learner engagement during online classes of French as a foreign language. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouëсны, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 340-345). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1481>

The literature on collaborative work provides a theoretical justification to its inclusion in course design: it promotes meaningful learning (Karppinen, 2005), can foster motivation (Rogat, Linnenbrink-Garcia, & DiDonato, 2013), and increases language learning gains (Hsu & Lo, 2018). These benefits can promote increasing learner engagement, a construct comprising three dimensions: social, affective, and cognitive (Svalberg, 2009). The social dimension refers to learners' participation and involvement in pedagogical tasks, the affective aspect represents their emotional connection to their learning and peers, and the cognitive element revolves around what is learned and how.

Ensuring learners become and stay engaged is a priority for language courses, and particularly important in entirely online courses which can have high dropout rates and in which learners have reported feeling isolated (Yuan & Kim, 2014). While collaborative work can help learner engagement, anecdotal experience at the CIM has shown it can have the opposite effect due to issues such as conflict within groups, scheduling and time management difficulties, and unequal participation amongst group members, also reported in studies with a similar scope (Sun, 2014).

In order to enable learners to fully benefit from peer collaboration, we designed a GDTA to train them to overcome issues related to negative dynamics within learner groups working collaboratively.

This case study seeks to understand the impact of a GDTA on learner engagement in terms of learners' sense of connectedness to their peers, motivation, and perceived learning gains. Below, we describe the methodology and report on the results according to the three dimensions of learner engagement – social, affective, and cognitive.

## 2. Method

The case study's context is a fully online upper-intermediate (B2 CEFR) French as a foreign language course offered biannually at the CIM. Learners take the course as part of their undergraduate degree and are aged 24 to 56.

Data was collected from anonymous and voluntary questionnaires sent to two cohorts from two consecutive semesters (Table 1). In total, 69 learners responded to the survey. Gender information was not collected. Both cohorts participated in the same course activities, with the difference that the GDTA was implemented only for the second one.

Table 1. GDTA, number of classrooms, and learners

	GDTA	#Classrooms	#Learners enrolled	#Survey responses
1. Cohort 1	No	5	149	39
2. Cohort 2	Yes	4	122	30

The collaborative activities consisted of pair and small group (three to four learners) activities, using Google Docs for asynchronous collaborative writing in groups, and a videoconferencing tool for synchronous pair speaking. For Cohort 1, small groups and pairs for these tasks were formed *ad hoc* before the start of the activities, and might stay the same if the learners wanted, but they might also change for each task.

For Cohort 2, the GDTA was implemented before beginning collaborative work. This activity consisted in taking part in a group Skype call to get to know each other better, and plan for upcoming collaborative tasks. The planning included assigning roles to different group members, discussing the steps involved in the writing task, as well as forming pairs for the speaking tasks and agreeing on meeting times. Instructions were provided to guide the Skype meeting conversation, which was recorded and sent to their teacher.

Two online surveys were administered to both cohorts: the first survey before the start of collaborative tasks and the second survey at the end of the course. Both surveys included three seven-point Likert-scale items asking learners about their engagement with the course, each corresponding to a dimension of learner engagement: “I feel connected to my classmates” (social), “I am highly motivated in this course” (affective), and “I am improving my French” (cognitive). Additionally, the end of semester survey included two open questions: “Which aspect of pair and group work motivated you the most” (affective), and “which activity (collaborative writing or pair speaking) helped you learn the most” (cognitive)? Quantitative analysis of the Likert-scale questions and qualitative analysis of open fields in the questionnaire were conducted using a content analysis methodology.

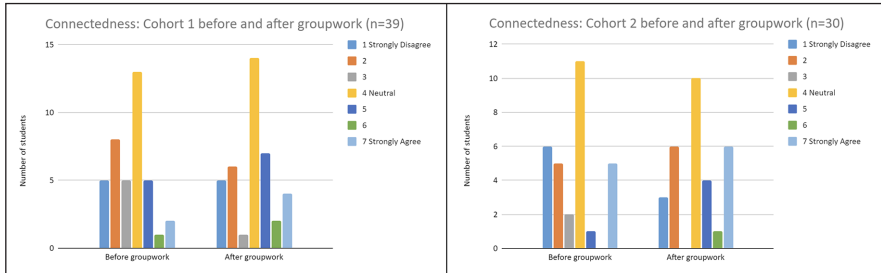
### 3. Results and discussion

#### 3.1. Quantitative analysis of Likert-scale answers

- “I feel connected to my classmates”

Cohort 1 and 2 learners' responses indicated a rise in their connection with their peers after collaborative work (groupwork). For Cohort 2, this increase was slightly higher, something which could be attributed to their participation in the GDTA (Figure 1).

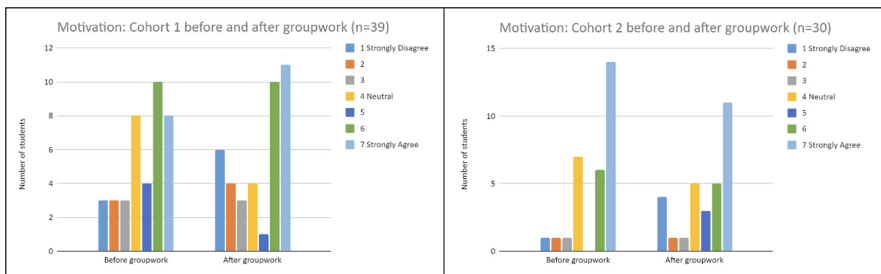
Figure 1. Perceived connectedness to classmates before and after groupwork for Cohort 1 and Cohort 2



- “I am highly motivated in this course”

Compared to Cohort 1, answers from Cohort 2 indicated a decrease in learners' reported level of motivation, which can perhaps be explained in more depth when looking at the answers to the open question on motivation (Figure 2).

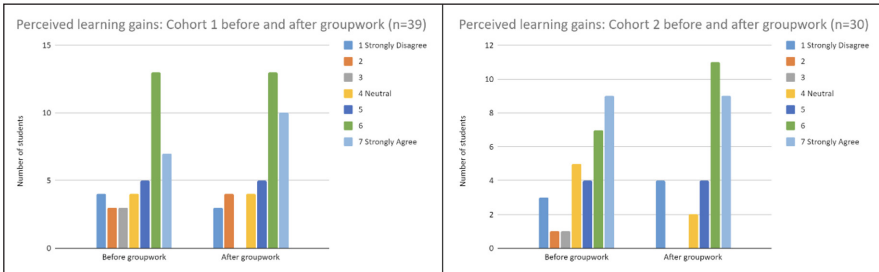
Figure 2. Perceived motivation before and after groupwork for Cohort 1 and Cohort 2



- “I am improving my French”

The highest increase for both cohorts was in learners' perceived learning gains before and after collaborative work. However, after the GDTA this was slightly higher for Cohort 2 (Figure 3).

Figure 3. Perceived learning gains before and after groupwork for Cohort 1 and Cohort 2



### 3.2. Qualitative analysis of open questions

Here, learners shared many thoughts often unrelated to the actual question, which nonetheless helped yield insights into their ideas and experiences about the course. These answers were then coded according to positive and negative comments.

Issues related to time management, scheduling, and unequal participation were reported by Cohort 1. Negative comments from both cohorts mentioned perceived level differences amongst group members/pairs preventing participants from performing to the best of their abilities, and the importance of assessment, given the context. While nine Cohort 1 learners expressed negative emotions, ranging from ‘stress’ to ‘panic’, only one Cohort 2 student commented on the ‘coldness’ of peer interactions. In Cohort 1, two learners described working collaboratively as motivational, an idea which was reinforced by Cohort 2, where nine learners commented on this.

In Cohort 2, four learners mentioned the continuous collaboration and interaction with group members as positive, reinforcing the idea that the GDTA and the ability to work within the same group of learners increased their feelings of connectedness to their peers.

Very few positive emotions were reported by Cohort 1 learners: four learners highlighted that working in groups allowed them to get to know others. However, they did not connect positive emotions with motivational or learning gains, in contrast with learners in Cohort 2, where words like ‘motivation’ or ‘motivated’ (5), and ‘enriching’ (1) were connected with positive emotions, such as ‘happy’ (4), ‘enjoy’ (2), and words related to peer connection, such as ‘breaking the ice’, and ‘making friends’ (3). Despite a decrease in reported motivation on the Likert-scale,

open answers from Cohort 2 indicated learners connected motivation to perceived learning gains arising from such connections. Furthermore, while four learners in Cohort 1 indicated a preference for working alone, only one learner from Cohort 2 did.

## 4. Conclusions

The Likert-scale responses suggest bigger differences in the dimension of cognitive engagement. However, the qualitative analysis reveals positive emotions and an increased sense of connectedness that learners identified as instrumental to their learning after GDTA. These results, although tentative given the limited number of participants and scope of analysis, highlight the importance of including GDTA before the start of collaborative work to help learners achieve a more positive learning experience. Although the differences are not substantial enough to draw firm conclusions, the positive results warrant further exploration, which should include classroom participation logs analysis and a comparison of perceived learning gains, and learner assessment results.

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# Differences in the effectiveness of remote online teaching and face-to-face on-campus teaching using the DDL approach in L2 English verb-noun collocations

Yoshiho Satake<sup>1</sup>

**Abstract.** This study explores the effectiveness of Data-Driven Learning (DDL) approach to second-language (L2) English vocabulary learning in on-demand online distance learning at a private university in Tokyo, Japan. The participants were 49 Japanese undergraduates, intermediate L2 English learners at the B1 level in the Common European Framework of Reference for languages (CEFR). The experimental group consisted of 25 students who completed verb-noun collocation correction tasks between the pre-test, and the post- and delayed post-tests. The control group consisted of 24 students who took the tests but did not perform the error correction task. The results show that for memorizing verb-noun collocations, on-demand online DDL – in which learners refer to screenshots of concordance lines – is as effective as DDL in a traditional on-campus setting, where learners search the Corpus of Contemporary American English (COCA) for themselves, even though the learning activities in remote online on-demand and face-to-face on-campus DDL are not exactly the same. This study suggests the potential of DDL in online on-demand classes. When a variety of teaching methods are being explored, DDL seems a viable option as an approach to L2 teaching.

**Keywords:** data-driven learning, remote teaching, collocations, error correction.

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**How to cite this article:** Satake, Y. (2022). Differences in the effectiveness of remote online teaching and face-to-face on-campus teaching using the DDL approach in L2 English verb-noun collocations. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thoušný, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 346-351). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1482>

## 1. Introduction

DDL is an inductive discovery learning method in which learners search for words and grammatical items in a corpus and observe examples of their usage; it has been reported to be effective in L2 learning with vocabulary acquisition (e.g. Boulton, 2017). While the teacher, author of this article, has used a DDL approach in face-to-face English classes for about a decade, she used it for the first time in on-demand distance learning classes in 2020 due to the COVID-19 pandemic. This study examines the effects of the DDL approach on L2 vocabulary learning in remote online on-demand classes by comparing them with those in Satake (2021), which was conducted in face-to-face classes on-campus. In this study, a remote online on-demand course refers to a course in which the author uploads self-study materials to the university's Learning Management System (LMS), learners submit assignments, and the teacher provides feedback.

## 2. Method

The procedure for this study is as follows:

- pre-test (five minutes, Week 1, both the experimental and the control groups);
- two verb-noun collocation correction tasks (Weeks 3-9, the experimental group only);
- post-test (five minutes, Week 10, both the experimental and the control groups);
- delayed post-test (five minutes, Week 15, both the experimental and the control groups); and
- analysis.

Participants were 49 first-year students majoring in history at a private university in Tokyo, Japan, who took a remote online on-demand English course taught by the author in the fall semester in 2020. All students agreed to voluntary participation in this study. The participants were intermediate L2 English learners at the B1 level in CEFR and had been studying English at school for eight years. They were 37 male students and 12 female students, aged 18-20, and all were



native Japanese. The experimental group consisted of 25 students who completed verb-noun collocation correction tasks. They took three tests: the pre-test was given two weeks before the first task, the post-test the week after the final task, and the delayed post-test one month after the post-test; 19 learners took all three tests, so only their data were used. The control group consisted of 24 students who took only the pre-, post-, and delayed post-tests, but did not perform the error correction task; the author used the data from the 21 learners who took all three tests. In each test, the 14 target verb-noun collocations were presented in one sentence each, and the verb parts were fill-in-the-blank questions. The following is an example:

( ) a deep breath and relax.

The same questions were used for all three tests. The learners were given five minutes to complete each test. If a verb in parenthesis was contextually appropriate, it was not required to be a target collocation verb, and it was considered to be correct. To verify the validity of the tasks, an analysis of variance test was conducted on the results of the pre-, post-, and delayed post-tests for both the experimental and control groups.

For the tasks, the learners were provided with a handout and were asked to read two English sentences containing highlighted unnatural verb-noun combinations with unnatural verb choices, which the author selected (here, ‘unnatural’ means extremely low frequency). They corrected these sentences by referring to the corpus resources, then transcribed the referenced example sentences in English, wrote up their findings in English or Japanese, and submitted their learning record through the university’s LMS. No explicit instruction on appropriate collocation was given after the task. The learners completed 14 sets of verb-noun collocation learning tasks, two tasks each week for seven weeks. [Table 1](#) below shows the 14 target collocations that the learners were likely to use in their writing assignments in the textbook for the course because they are listed as vocabulary to be learned in the textbook. In unnatural verb-noun combinations, ‘do’ was always used, since the unnatural combinations would be natural in Japanese if they were literally translated into Japanese. The following is an example of highlighted unnatural verb-noun combinations; the underlined words were originally highlighted:

Do a deep breath and relax.

For the qualitative analysis, the author consulted the worksheets submitted by the learners in the experimental group.

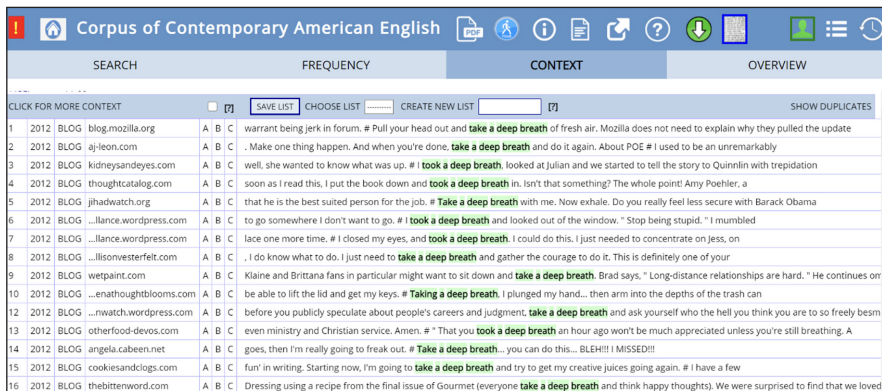
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As reference materials, screenshots of the concordance lines were used by the learners (e.g. see Figure 1) because the classes were conducted as on-demand distance classes, which did not allow sufficient instruction for the learners to use the corpus directly and appropriately. The author searched the COCA corpus for verbs co-occurring with the nouns of the target verb-noun collocations and distributed the screenshots of concordance lines in which the target nouns co-occurred with three high-frequency verbs, including the correct verb. As a reference corpus, the author used the COCA, a large balanced corpus with an easy-to-use interface (Davies, 2008).

Table 1. Target collocations

1	take a breath	8	make a statement
2	take control of one's life	9	give a speech
3	make a photocopy	10	make a change
4	make a guess	11	take an action
5	take the lead	12	make a contribution
6	give a welcome	13	give a performance
7	make an argument	14	make progress

Figure 1. Example of screenshots of the concordance lines

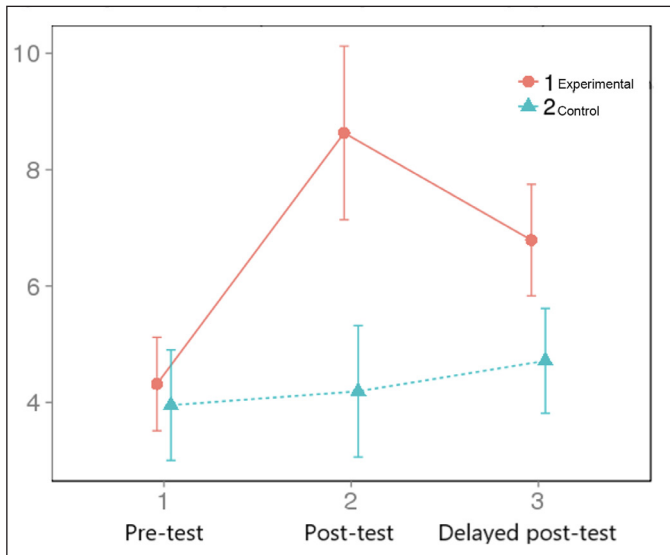


### 3. Results

As Figure 2 shows, the experimental group showed an increase in the post-test and delayed post-test scores over the pre-test with the mean pre-test score of 4.3, the mean post-test score of 8.6, and the mean delayed post-test score of 6.8, while the control group showed only a minimal change between tests with the

mean pre-test score of 4.0, the mean post-test score of 4.2 and the mean delayed post-test score was 4.7. As the results of the analysis of variance show, there were significant differences in between-group main effects with large effect size ( $F(1, 119)=11.879, p=.001, \eta^2=.17$ ), between-test main effects with medium effect size ( $F(2, 119)=52.864, p<.001, \eta^2=.12$ ), and interactions with medium effect size ( $F(2, 119)=40.365, p<.001, \eta^2=.09$ ). The results of the sub-effect test revealed significant differences between the groups for the post-test (experimental group > control group,  $p<.01$ ) and the delayed post-test (experimental group > control group,  $p<.01$ ). Significant differences were also obtained between the tests for the experimental group (post-test > pre-test,  $p<.01$ ; post-test > delayed post-test,  $p<.01$ ; delayed post-test > pre-test,  $p<.01$ ). Since the post-test and delayed post-test scores were significantly higher than the pre-test scores only in the experimental group, it can be said that DDL, in which learners refer to screenshots of concordance lines in remote classes, is effective for learning verb-noun collocations.

Figure 2. Pre-, post-, and delayed post-test results for experimental and control groups



#### 4. Discussion and conclusions

This study demonstrates that learning verb-noun collocations in remote on-demand classes by referring to screenshots of concordance lines may be as effective as learning to search for verb-noun collocations by learners in face-to-face classes

on-campus (Satake, 2021). Since the learners did not search the corpus themselves but only read the concordance lines selected by the teacher, it is similar to paper-based DDL, which uses printed concordance lines selected by the teacher, and thus there is more teacher intervention and less learner autonomy. The results confirm previous research that computer-based and paper-based DDL are equally effective as L2 learning tools (e.g. Chujo & Oghigian, 2012). Since the DDL in this study does not have an autonomous search, learning may have a qualitative difference from face-to-face DDL in on-campus classes. The learners in this study often made simple statements such as “I found that this verb comes before this noun”, while the face-to-face DDL learners in on-campus classes often described deeper discoveries about the meaning of the verb in the collocation when comparing and determining which verb was appropriate. Qualitative differences in learning could affect the method and amount of output of learned vocabulary, the use of associative knowledge, and other aspects of learned knowledge. However, the results show that simply looking at the given search results without doing a search is effective for the purpose of long-term memory of vocabulary items. This study suggests the potential of DDL in distance learning, which has been accelerated as a new teaching method during the COVID-19 pandemic. Where a variety of teaching methods are being explored, DDL is a viable option as an approach to L2 teaching.

## 5. Acknowledgments

This work was supported by JSPS KAKENHI Grant Number 20K13109.

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# SpEakWise VR: exploring the use of social virtual reality in telecollaborative foreign language learning between learners of English and German

Karsten Senkbeil<sup>1</sup>, Gillian Martin<sup>2</sup>, and Breffni O'Rourke<sup>3</sup>

**Abstract.** This paper discusses the potential of immersing foreign language learners in Social Virtual Reality (SVR) in an international seminar, designed by the authors, called SpEakWise VR, combining the tandem language learning paradigm with gamification in immersive virtual environments. SpEakWise VR builds on an existing telecollaboration (SpEakWise) between undergraduate students in Trinity College Dublin and Hildesheim University. We set out to explore how inclusion of an SVR activity influences student engagement, learning involving intercultural and multilingual problem solving, and team building. This paper presents initial observations from our research, concerning multimodality in embodied immersion and code-switching, and proposes future avenues of inquiry.

**Keywords:** social virtual reality, digital game-based language learning, telecollaboration, pragmatic competence, embodiment.

## 1. Introduction

SpEakWise is a telecollaborative seminar running annually since 2007 between Trinity College Dublin and the University of Hildesheim, involving undergraduate students of languages and intercultural communication at both universities. The seminar's aim is to foster foreign language skills (German and English) and the development of pragmatic and critical cultural awareness,

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**How to cite this article:** Senkbeil, K., Martin, G., & O'Rourke, B. (2022). SpEakWise VR: exploring the use of social virtual reality in telecollaborative foreign language learning between learners of English and German. In B. Arnþjómsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Gardarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 352-357). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1483>

and, with this, to promote intercultural competence (Martin, O'Sullivan, & O'Rourke, 2013). SpEakWise has been optimized in response to evolving technologies: in early iterations, students interacted via web chat and in recent years via videoconferencing. The most recent version has seen the integration of a collaborative activity in an SVR context, which is the focus of this paper. Our concept unites the idea of tandem language learning (Telles, 2015) with gamification (Reinders & Wattana, 2015) and insights from the embodied and 'empractic', i.e. 'hands-on', character of VR experiences.

SVR is a new social medium with growing relevance beyond universities and classrooms (Senkbeil, 2021). It offers an innovative way of bringing students together in virtual learning spaces and providing an experience of quasi-embodied co-presence across geographical distance, through VR avatars. With the help of the developer's kit of the SVR platform RecRoom, we created virtual environments in which our students solve multilingual cooperative puzzles together to progress through an 'escape room'-style adventure which challenges them to test and improve their communicative problem solving competencies in their target language. It functions at the intersection of telecollaboration and Digital Game-Based Language Learning (DGBLL), augmented by the experience of VR as a space to meet, communicate, co-orientate, and coordinate action (Senkbeil, 2021).

As opposed to screen-based virtual environments, VR creates the feeling for its users that they are involved in an actual three-dimensional world existing beyond the physical space that they normally inhabit, defined as the *sense of presence* (Lombard & Ditton, 1997). Our pilot studies on communication in SVR show that such discourse functions differently compared to screen-based digital-social interactions, because VR arguably influences its user in a more intensive, more visceral way than other media (Senkbeil, 2021; Senkbeil, Ahlers, Lazovic, & Schweiger, 2020). VR users often feel that they embody the avatar whose first-person perspective they share, rather than merely controlling a character from a third-person viewpoint. This *sense of embodiment* can result in intensive forms of the 'proteus effect' (Yee & Bailenson, 2007): given a high sense of presence in a VR experience, users do not mimetically 'act as if' they are that avatar, they *are* that avatar in that particular time and space.

As there exists only limited research on the integration of immersive environments in tertiary-level teaching, we are broadly exploring how the inclusion of an SVR activity impacts on student engagement and learning in situations involving intercultural and multilingual problem solving and team building. Our research

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also seeks to contribute to theory building concerning the impact of embodied immersion on communication through SVR.

For SpEakWise VR, we seek to exploit these effects, informed by insights from cognitive linguistics, particularly the theory of embodied cognition, highlighting that there are strong associations between language acquisition, space, and motor concepts (Barsalou, 2008; Pulvermüller, Hauk, Nikulin, & Ilmoniemi, 2005). Our research furthermore involves theoretical-methodological models from linguistic pragmatics that emphasize 'empractic' language use (Bühler, 2011 [1934]), i.e. linguistic action intertwined with non-linguistic activities.

## 2. Design of tasks and implementation

The SpEakWise VR environments are designed to meet the requirements of tandem language learning and gamification, and to utilize the embodied and empractic character of VR experiences as mentioned above. The environments have a modular and adaptable structure: two to four players can play two to four 'levels' together, each taking about five minutes to solve. The gamification elements involve 'escape room'-style collaborative puzzles in relatively small areas, so that users are always able to see and hear each other. Each team is divided in two halves, separated by a fence in the environment. The fence cannot be traversed, but communication and vision across it are unimpeded. The information necessary to solve the puzzle is split between the areas on either side of the fence, meaning that students must engage in negotiation of meaning across languages and cultures to succeed in the task. As is usual in language tandems, SpEakWise VR students were given the guideline that they should try to speak 50% of the time in German and 50% in English.

The 27 students participating in the SVR activity had already been engaging with each other over several weeks via videoconferencing. The activity involves two stages. In the first stage, groups of four students (two Dublin and two Hildesheim) engage in a brief 'warm-up' activity, learning to move and interact with the head-mounted displays and handheld controllers. The DGBLL activity immediately follows, in which the students encounter the problem solving situations. Each session lasts 20-30 minutes, is recorded, and subsequently transcribed following conversation analytic principles. Students complete debriefing interviews about their experience.

As our research is at an early stage, we summarize our initial observations on the intersection of language practice and immersion in a virtual environment in the following section.

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### 3. Initial observations from our research

One striking effect of the observed SVR interactions has been the employment of all multimodal affordances provided by the technology to achieve communicative success (here: finding solutions to collaborative puzzles). Students use their virtual embodiment (i.e. the intuitive mapping of their physical motions onto their avatars) to co-orientate with their listeners, to align viewpoints, and to gesture directions or the shape of objects. In contrast to videoconferencing, however, students engage with each other not just linguistically but also (quasi-)physically in a 3D virtual space. This invites researchers and teachers to pay attention particularly to lexical fields connected to space and motion (prepositions, deictics), pragmatic patterns to create co-ordinated attention, and giving directions (Senkbeil et al., 2020).

Further, while we did not police the guideline around language use strictly (see Section 2), we observed quite frequently intensive forms of code-switching. For example, an Irish student, following German instructions to deduce the number code which opens the door to the next level, explained to her German listeners:

“the first number is three and then the second number is eins weniger als die erste Zahl, so it’s two” (En1, SpEakWise in-game corpus).

Such cases demonstrate students’ involvement and intrinsic motivation to solve the task and continue their ‘adventure’. Learners creatively use all linguistic and multimodal affordances in – almost always – communicatively successful ways. The students themselves commented in debriefing interviews on code-switching as an effective means to an end. For example, a Trinity College Dublin student observed:

“It was interesting with the languages, I thought, how we changed between... as far as I felt it didn’t feel as if one language was dominating. We were switching between German and English quite frequently. And it was a really nice way [to communicate]” (En3, SpEakWise debriefing corpus).

More generally, the debriefing interviews indicate that students are motivated, engaged, and experience SVR as a positive addition to their language learning journey.



#### 4. Next steps in the development of SpEakWise VR and conclusion

Based on initial observations from our study, SVR seems to elicit the employment of all multimodal communicative affordances, particularly based on learners' experience of a sense of virtual embodiment through their avatars. SVR provides the potential for an empractic, i.e. 'hands-on' approach to certain lexical fields, e.g. motion verbs, locations, prepositions, and deixis. Our next steps include further upscaling of the immersive experience (more users simultaneously, longer immersion, a growing variety of communicative challenges, etc.). Our research will continue to employ conversation-analytical methods, e.g. turn-by-turn analysis of transcripts. Moreover, we will add empirical measurements of learners' progress, and work with user feedback to further improve the seminar.

#### 5. Acknowledgments

We thank the Ministry for Science and Culture in Lower Saxony [*Ministerium für Wissenschaft und Kultur Niedersachsen*] for funding this research (*Niedersächsisches Vorab 76ZN1897*).

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# Comparing lexical complexity using two different VE modes: a pilot study

Tomotaka Shiroyama<sup>1</sup>

**Abstract.** The aim of this study is to compare how two different Virtual Exchanges (VE) contribute to language learning in a Japanese university context. Task-Based Language Teaching (TBLT) using VE has been a focus in this study. There are huge advantages of using technology in language teaching such as increasing language use opportunities, feedback, and others (Lee, 2016). However, many recent TBLT and VE studies have focused on students' interaction in the classroom (Hagley, 2020). This study investigated whether two different types of VEs have the potential to promote 'real-world communication' in a university context. The findings show that there was no significant difference regarding lexical complexity between both modes. The result suggests that both modes are unlikely to enhance students' vocabularies.

**Keywords:** virtual exchanges, task-based language teaching.

## 1. Introduction

VE has incorporated TBLT in some instances but others have focused more on supplementing classwork with VE to allow students to participate in international interactions. Hagley (2020) notes that unless VE is incorporated into the syllabus, "EFL often became an academic activity with few chances to use English in real-world communicative events" (pp. 74-75). Ribeiro (2016) argues that in studies on synchronous computer-mediated communication, there has not been enough attention paid to the interaction between Non-Native Speakers (NNS) and Native English Speakers (NES). To solve this, the current study focuses on interactions between NES and NNS using Synchronous VE (SVE), with an online chat, and

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**How to cite this article:** Shiroyama, T. (2022). Comparing lexical complexity using two different VE modes: a pilot study. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 358-363). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1484>

Asynchronous VE (AVE), with a forum discussion in the TBLT framework. This study refers to the question:

RQ1. Are there any differences in lexical complexity between the discourse produced using SVE and AVE when NES interact with NNS?

This research explores how VE can be utilized effectively by English instructors in the TBLT framework to enhance college students' communicative abilities.

## **2. Method**

### **2.1. Participants**

Eight participants took part in this research. They were all university students and over 18 years old and signed consent forms to take part in this study. The participants were divided into a target group of L1 Japanese students of English (N=7, one male and six females) and an L1 British English interlocutor participant. According to self-reported information in a background questionnaire, the target group were pre-intermediate (equivalent to TOEIC Listening and Reading 550), their mean age was 20 years old (range 19-21), their average length of living abroad in English-speaking countries was one week (range zero to three weeks), and the average time spent studying English was 9.7 years (range six to 17 years). I targeted pre-intermediate students because most students in Japanese universities are pre-intermediate level.

### **2.2. Instruments**

In this research, two decision-making tasks (see [supplementary materials](#), Appendices A and B) and a background questionnaire (see [supplementary materials](#), Appendix C) were used as research instruments.

### **2.3. Data collection**

The data collections were conducted remotely several times on different dates. I divided the seven participants in the target group randomly into two groups, Group A and Group B. One interlocutor worked on tasks with seven students (three from Group A and four from Group B). Each student in the target group was asked to do two different decision-making tasks with the same interlocutor. The students in Group A were to work on a task for 20 minutes using SVE, the online chat (Zoom)

first, and then AVE, the forum discussion (Microsoft Teams). The Group B students were to work on a task using AVE, forum posting (Microsoft Teams) first, and then on another task using SVE, the online chat (Zoom). For the forum posting task, each group posted their opinions at least three times a week. In order to resolve the effect of posting order, the modes of VE and tasks are counterbalanced.

### **3. Results**

#### **3.1. Lexical complexity**

Lexical diversity is one of the measurements of lexical complexity. In the current study, I will follow [McCarthy and Jarvis's \(2007\)](#) definition of lexical diversity as “the range and the variety of vocabulary deployed in a text by either a speaker or writer” (p. 459).

To analyze lexical diversity, there are some measurements, for example the Type-Token Ratio (TTR), Guiraud's Index (Root TTR), D (VOCD-D), and the Measure of Textual Lexical Diversity (MTLD). However, TTR, Root TTR, and VOCD-D are predisposed to be affected by text length ([DeBoer, 2014](#)). As a result, the current research employed MTLD, because this metric can measure various text lengths. The mean number of words written using SVE was 116.57 words per group, ranging from 59 to 177 words. The mean number of words produced using AVE was 123.28 words, ranging from 19 to 202 words. Therefore, texts varied considerably in length. To calculate the MTLD value, the computational software Coh-Metrix 3.0 was used.

#### **3.2. Results of lexical complexity between SVE and AVE**

In this research, eight participants took part in total. They were divided into two groups: a target group (N=7) and a group of intercalators (N=1) for the target group. The discourse of the target group was measured on the same dependent variable (i.e. the MTLD value) under two different conditions (i.e. SVE and AVE). For this research design, a paired-sample *t*-test was thought to be the most appropriate test. In order to judge whether the data set in the current research met with the assumptions of a paired-samples *t*-test, the difference between the two VE forms (SVE and AVE) was initially calculated. Then, the assumption of normality and no outliers was confirmed. As evaluated by inspection of a boxplot, outliers were not seen. The different scores were also normally distributed, as shown by

Shapiro-Wiki’s test,  $p=.063>.05$ . As a result, to examine differences using MTLTD between SVE and AVE, it was calculated that a paired-samples  $t$ -test was the most appropriate statistical test. Descriptive statistics for MTLTD in discourse in SVE and AVE are illustrated in Table 1. The results of a paired-samples  $t$ -test indicated that there was no statistically significant difference between the MTLTD scores in the two VE modes,  $t(6)=1.181, p=.282$ .

Table 1. MTLTD using SVE and AVE

SVE (Chat)		AVE (Forum)	
Mean	SD	Mean	SD
64.52	18.46	54.09	12.63
Note. N=7.			

## 4. Discussion

The current research was motivated by a desire to explore how different modes of VEs can be utilized effectively in the TBLT framework. Shiroyama (2021) argues that more than one mode of VEs is insufficient. Considering this, this research investigated the discourse features using two different forms of VEs and focusing on lexical complexity. Regarding task types, Shiroyama (2021) criticized that several studies used open-ended tasks, whereas this research employed decision-making tasks.

Regarding lexical complexity, this study was not consistent with Hwang’s (2008) study. She states that the AVE group produced ‘a richer vocabulary’ as well as ‘more complex written language’ compared with the SVE group. However, any comparison between this research and Hwang’s study requires caution. First, Hwang used different groups for the two modes. Consequently, the different result might have come from the difference in the participants in each group. Second, Hwang examined lexical complexity by analyzing lexical diversity as ‘the square root of the double number of tokens’ while this study employed lexical diversity calculated using the MTLTD. The different types of activity (i.e. discussion in the case of Hwang’s research) may have affected lexical aspects of participants’ language production.

## 5. Conclusions

This research has examined the potential for the integration of different forms of VEs and TBLT. The finding in this research indicates that there was no statistically

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significant difference regarding lexical complexity using SVE and AVE. For future research, firstly it will be necessary to examine not only lexical complexity and grammatical complexity points, but also fluency and accuracy to be able to effectively utilize VE within the TBLT framework. Another direction would be to focus on students' language production when they work with different proficient interlocutors because today many young people tend to use language exchange applications i.e. Hello-Talk, Tandem. Conclusively, it is necessary to discover the ways in which VE can assist language learners to enhance their target language abilities.

## 6. Acknowledgements

In writing this paper, I was really warmly supported by many individuals, and especially three people. First of all, I am very grateful to Mr Anthony Robins, who is a current Toyohashi Japan Association for Language Teaching (JALT) president. He helped me with carrying out this study. Also, his feedback and tutorial advice regarding my research have been most useful. Without his guidance, I would not have published this article.

Next, I would like to thank Dr Motoaki Mouri, who taught me during my undergraduate in Japan. He advised me about some academic work such as publications and research presentations. Without his support, I could not have published this study.

Finally, I would like to thank Mr Yoshinobu Shiga, member of Toyohashi JALT. He always encouraged whenever I hit the wall with my studies or academics. Without his gracious support, I could not have published this paper.

## 7. Supplementary materials

<https://research-publishing.box.com/s/nzocd9h2tpisqy11id81ax77dmtdalyu>

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# The role of learners' memory in app-based language instruction: the case of Duolingo

Iro Vasileiou<sup>1</sup> and Diana Pili-Moss<sup>2</sup>

**Abstract.** The current study investigated the role of visual short-term memory, working memory, and declarative memory as individual differences in the earliest stages of vocabulary and syntactic learning in *Duolingo*-based language instruction. Thirty-eight L1-Greek adults completed memory tasks and engaged in learning Navajo on *Duolingo*. Subsequently, vocabulary and syntax were assessed respectively via a word recognition, a word translation, and a grammaticality judgement task. Multiple regression analyses revealed an advantage for distributed practice both in vocabulary and syntax, after controlling for amount of practice. Further, declarative memory played a significant role in learning syntax and vocabulary, when measured in a word translation task. Extending the analysis for the first time to app-based environments, the results of the present study confirm the importance of declarative memory and distributed practice in adult acquisition of L2 vocabulary and syntax.

**Keywords:** mobile-assisted language learning, Duolingo, individual differences, memory functions.

## 1. Introduction

Ubiquitous availability of mobile-assisted language learning technology has led to the development of commercial tools, with studies relating their use to significant linguistic gains in second language (L2) vocabulary and grammar (Loewen et al., 2019). Mobile apps offer benefits including access to less commonly taught languages (Reinders & Benson, 2017) as well as features designed to increase learners' motivation (Rachel & Rockinson-Szapkiw, 2018), such as *experience points* (Duolingo). Additionally, some apps (including Duolingo) provide

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**How to cite this article:** Vasileiou, I., & Pili-Moss, D. (2022). The role of learners' memory in app-based language instruction: the case of Duolingo. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 364-369). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1485>

approachable bite-sized lessons offering adaptability to individual study habits (Rosell-Aguilar, 2018) and thus allowing a more distributed learning, a type of schedule for which advantages have been independently reported in the SLA literature (e.g. Bird, 2010).

Next to learning schedule, many studies in the SLA literature have evidenced the role of cognitive individual differences including short-term and working memory (e.g. Dussias & Piñar, 2010). Additionally, experimental studies have reported that declarative long-term memory generally predicts L2 vocabulary learning and L2 grammar learning in the early stages of acquisition (e.g. Morgan-Short et al., 2014). Although previous research has investigated the role of memory in computer-assisted environments, little research is available on the role of cognitive individual differences in more ecologically valid environments, such as commercial language learning applications.

Considering the extensive use and success of *Duolingo*, our aim was to investigate the role of cognitive abilities in learning a new language through this application. The study's main research question was formulated as follows:

RQ: To what extent do working memory, visual short-term memory, and declarative memory predict vocabulary and syntactic learning in the early stages of Duolingo-based instruction?

## 2. Methods

### 2.1. Participants

Thirty-eight L1-Greek adults (18 to 54 years of age) with no significant previous exposure to verb-final languages, including Navajo, agreed to learn the language on Duolingo for a period of five days. Greek was not available as a medium of instruction on Duolingo. However, participants' proficiency (B1 to C1 CEFR; based on self-reports) was considered sufficient for English to be used.

### 2.2. Cognitive tests

In Phase 1, participants completed three computer-administered cognitive tasks. Declarative long-term memory was assessed through a verbal paired-associates

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task, visual short-term memory was measured via a visual forward digit span task, and working memory was measured via a backward digit span task.

### **2.3. Language learning on Duolingo**

In Phase 2, participants engaged in learning Navajo on Duolingo. The tracking feature *Duolingo for Schools* allowed researchers to assign participants the same set of lessons and review their practice schedules unobtrusively.

Participants were assigned a total of nine lessons starting from the lowest level of difficulty from four thematic units (introduction, family, food, and animals), known as ‘bubbles’. The lessons included 46 lexical items (conversational expressions, nouns) and 16 sentences with four different verbs. Participants received no explicit rules but received correct/incorrect feedback and in some cases, the correct answer was presented after trial. The participants were free to distribute learning across the instruction period (one to five days).

### **2.4. Linguistic assessment**

In Phase 3, one to two days after language instruction was completed, participants were given computer-administered tests to assess learning of Navajo vocabulary and syntax. For vocabulary learning, participants completed a word recognition and a word translation task. In the word recognition task, participants were asked to judge whether 16 presented words were Navajo words. In the word translation task, participants judged the correctness of 16 Navajo items paired with an English translation. For syntactic learning (word order learning), participants were assessed in a grammaticality judgement task, where they were asked to judge the word order grammaticality of 40 sentences. Grammatical sentences (20 items) followed the patterns typical of Navajo (SOV, Location-V) whereas ungrammatical sentences violated Navajo’s word order (\*VSO, \*SVO, \*V-Location).

## **3. Results and discussion**

Multiple regression models were calculated with accuracy in each assessment task as the dependent variable, and outcomes in the three memory functions as well as three co-variates as independent variables. The co-variates were: age at testing, number of days of Duolingo study (as a measure of distribution of practice), and L2 exposure (number of years of formal English instruction and residency in

English-speaking countries). A summary of the descriptive statistics can be found in [supplementary materials S1](#).

### 3.1. Vocabulary learning

The first model analysed word recognition accuracy ([Table 1](#)) and revealed that no memory function predicted accuracy in word recognition. The only statistically significant ( $p=.001$ ) predictor was the days of Duolingo study with a  $\beta$  value of .56. It is possible that the word recognition task required a relatively low cognitive load and thus differences in cognitive ability did not emerge as a significant factor.

Table 1. Multiple regression model for word recognition accuracy

Model	Predictors	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>	<i>R</i> <sup>2</sup>	<i>Adjusted R</i> <sup>2</sup>
1						.361	.224
	STM	.06	.17	.07	.626		
	WM	-.07	.19	-.08	.699		
	DLTM	.12	.11	.18	.295		
	AaT	.01	.04	.04	.821		
	L2 Exposure	-.07	.31	-.04	.054		
	Nr. Days	.77	.21	.56	.001		

However, memory functions held a predictive role in word translation accuracy ([Table 2](#)).

Table 2. Multiple regression model for word translation accuracy

Model	Predictors	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>	<i>R</i> <sup>2</sup>	<i>Adjusted R</i> <sup>2</sup>
2						.433	.323
	STM	.33	.18	.33	.038		
	WM	-.25	.19	-.26	.196		
	DLTM	.31	.12	.46	.012		
	AaT	.00	.04	.00	.979		
	L2 Exposure	-.10	.32	-.05	.772		
	Nr. Days	.55	.22	.36	.019		

Here declarative long-term memory was a statistically significant predictor ( $p=.010$ ) with a correlation coefficient value of .46, and short-term memory was a significant predictor ( $p=.038$ ) with a value of  $\beta=.33$ . These results are

in line with the hypothesis of a key role of declarative memory in learning of vocabulary, a relationship which might have also been strengthened by the pair-associative learning characteristics of the translation task. No significant relationship between working memory and word translation accuracy emerged. Once more, the days of Duolingo study was a significant predictor ( $p=.019$ ) with a  $\beta$  value of .36.

### 3.2. Syntactic learning

The multiple regression model for syntactic accuracy (Table 3) revealed that declarative long-term memory was a significant predictor of accuracy ( $p=.007$ ), with a  $\beta$  value of .53.

Table 3. Multiple regression model for syntactic accuracy

Model	Predictors	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>	<i>R</i> <sup>2</sup>	<i>Adjusted R</i> <sup>2</sup>
3						.590	.564
	STM	-.36	.45	-.12	.439		
	WM	.45	.49	.15	.367		
	DLTM	.85	.29	.53	.007		
	AaT	-.21	.09	-.31	.032		
	L2 Exposure	-1.7	.83	-.30	.074		
	Nr. Days	.62	.56	.49	.008		

This finding is consistent with experimental studies that reported a role of declarative memory in grammatical accuracy in the early stages of adult L2 acquisition (Morgan-Short et al., 2014). Contrary to previous findings (Dussias & Piñar, 2010), working memory was not a significant predictor of participants' sensitivity to Navajo sentence grammaticality ( $p>.05$ ). Perhaps the role of working memory was not prominent as participants judged word order in sentences without complex structures which might have required less attentional resources.

The days of Duolingo study was also a significant predictor ( $p=.008$ ) with a coefficient of  $\beta=0.49$ . This finding shows that more distributed practice predicted higher syntactic accuracy scores, corroborating the findings of previous studies on syntactic acquisition (Bird, 2010). Age at the time of testing was also a significant predictor ( $p=.032$ ) with a negative coefficient  $\beta=-0.31$ , meaning that the older participants were, the more limited was their ability to distinguish grammatical and ungrammatical sentences in Navajo, possibly due to age-related cognitive decline (Salthouse, 2004).

## 4. Conclusions

Overall, the findings of the present study suggest that declarative memory and visual short-term memory play an important role in lexical learning as measured in a word translation task. Declarative memory was also a significant predictor of syntactic learning. Moreover, the study reported a distributed study effect in both lexical and syntactic learning. This means that, when matched for the amount of instruction, the more days participants spent on the application, the better they performed in both vocabulary and grammar tasks.

## 5. Supplementary materials

<https://research-publishing.box.com/s/z25f55ew3wor8ekettiywc5ni3j7uvij>

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# Teacher attitudes toward online assessment in challenging times

Ruby Vurdien<sup>1</sup> and Pasi Puranen<sup>2</sup>

**Abstract.** This paper explores and reports on teacher attitudes toward online assessment in foreign language teaching and learning in Spain and Finland. During the pandemic, teachers have had to face serious challenges, such as the method to be adopted, task design or handling student feedback, in order to ensure effective student assessment. They have had to find completely new ways to assess their students. A qualitative approach was adopted and data were gathered from a questionnaire shared on Google form, which was completed by 23 teachers from Spain and 11 from Finland. The aim was to examine (1) the advantages and disadvantages of using online assessment tools to measure students' progress, and (2) the participants' perceptions of their experience of assessing their students online. The findings show that while online assessment tools, especially quiz apps, provide instant feedback and correction for students and teachers, it is difficult to control what tools students might be using to support their learning and/or assessment assignments.

**Keywords:** assessment, online tools for language learning, teacher attitudes.

## 1. Introduction

Assessment plays a crucial role in all pedagogical programs, since it monitors students' learning progress via activities which aim to measure whether the learning outcomes match the intended results of the educational program. In this regard, Webber (2012) points out that assessment implies "activities designed primarily to foster student learning" (p. 202). Consequently, it cannot be denied that, as part

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**How to cite this article:** Vurdien, R., & Puranen, P. (2022). Teacher attitudes toward online assessment in challenging times. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thoučsny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 370-374). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1486>

of their professional development, teachers should design and use formative and summative assessment in their classroom.

Online assessment of students has long been established because of the online learning mode. Nevertheless, several studies (e.g. [Boitshwarelo, Reedy, & Bilany, 2017](#); [Brady, 2005](#)) have reported problems that have emerged and affected their good practice. The shift from face-to-face conventional classroom assessment to an online environment, caused by the outbreak of Covid-19, has had a significant effect on different facets of class assessment. Teachers have had to face serious challenges, such as the method to be adopted, task design or handling student feedback, in order to ensure effective student evaluation.

In view of the above-mentioned points, the two questions that guided the present study are the following.

- What are the perceived advantages and disadvantages of using online assessment tools to measure students' progress?
- How do teachers perceive their experience of online student assessment during challenging times?

## **2. Method**

The current research examined how a group of 34 teachers (21 Spaniards and 11 Finns) teaching different online language courses (English, French, Finnish, Russian, Spanish, and Swedish) in primary, secondary, university, and private language school education used different digital assessment tools to assess their students online, and what their attitudes toward online assessment were. To select our participants in both countries, an email explaining the goal of our study was sent to different teachers in the different educational sectors mentioned above. The respondents were the cohort of the study. They were also asked to comment on the advantages and disadvantages of using online tools for this purpose.

A qualitative approach was adopted, and the participants were requested to complete a questionnaire, consisting of 19 questions, in order to appraise their views on (1) the different online assessment tools they use, (2) the advantages and disadvantages of online assessment, and (3) their experience of online assessment during the pandemic. The data collated were classified in order to match the two research questions.



### 3. Results and discussion

While 73.5% of the teachers were already using online assessment tools before Covid-19, around 40% had five or more years of experience with them, and 41.2% of the teachers self-evaluated themselves as experts, leaders, or pioneers (B2 to C2) in digital competence.

When asked what online tools they used for assessment, there were in total more than 60 different online tools that those teachers used for assessment. The most common ones were Kahoot, Moodle, Quizlet, Google Forms, Socrative, Flipgrid, and Mentimeter. These were used for various purposes; 91.2% of teachers employed them to assess writing, 82.4% for reading, 70.6% for speaking, and 58.8% for listening.

When the participants were asked an open-ended question about the advantages of using online assessment tools, many of them mentioned that they provide instant feedback for both students and teachers. They also reported that these online tools tend to be faster and that they allow for easier correction, a finding emergent in another study (Boitshwarelo et al., 2017). Therefore, teachers could have more free time to plan other constructive activities for their students. Furthermore, such online tools can permit teachers and students to work at any time and in any place, thereby helping students to feel more motivated and engaged in their tasks, since they can choose when to perform them. Progress can be monitored faster as instantaneous feedback is provided online in most cases, which can be useful for identifying students' strengths and weaknesses.

Our participants also mentioned that, once created, quizzes and similar tasks can be exploited ceaselessly among students of different groups without incurring any major extra work; also, it is easy to recycle materials year after year. One noteworthy observation was that the efficiency of such activities emanates from the ability to evaluate a wide range of topics in one test, compared with assessment where responses need to be constructed (Brady, 2005). Another benefit pointed out is the fact that no hard copies are needed, since task completion takes place online. This is a cheaper option for students because of not having to purchase different materials. Additionally, automatic correction was sometimes used by some of the teachers in their assessment of student task performance.

It was also argued that some applications like Socrative correct students' answers to their quizzes automatically and compile useful statistics about their performance, which saves teachers a great deal of time while also providing them with important

information, such as their students' progress in grammatical or lexical resources. Consequently, this feedback can be helpful for future task preparation.

In terms of the disadvantages of using online assessment tools to measure students' progress, the factor of trust emerged more than once. Many teachers felt that it is difficult to control what tools students might be using as a support for their online language tests and evaluation. As most of the apps employed by the participants do not seem to be convenient for providing feedback, online quiz tools such as Socrative might be more appropriate to this end. Some stated that the main drawback of almost all the applications available is that there is no guarantee that the person logging in to do the evaluation is, in fact, their student; as their cameras are turned off in certain cases, there exists the suggestion that cheating can be encouraged. Perhaps teachers should make their own choice regarding the online tools for their students in order that effective learning takes place; similarly, it might be advisable for students to have their cameras turned on while being assessed online.

Our participants also reported that some online tools do not allow for flexibility in assessing, for example, recognizing partially correct answers; moreover, creating such grading schemes would be technically very complex. In addition, they considered that designing tasks that use online assessment tools is often time-consuming, in terms of planning, creating, checking, testing, correcting, retesting, and so on.

Last but not least, one disadvantage relating to the physical state was highlighted. According to some teachers, working long hours online on a daily basis can put strain on the body, particularly the eyes.

## **4. Conclusions**

This study provides novel insights into how teachers perceive the use of online assessment tools to monitor their students' progress. It has been noted that there is a wide range of tools that have proved to be useful in assessing students' progress in the receptive and productive skills, that is, reading, listening, writing, and speaking. One important point is that online assessment tools permit teachers and students to work where and when they choose. In other words, online assessment tools foster flexibility in learning, and teachers are afforded more free time to devote to planning activities that will be conducive for effective learning to take place. In some teachers' views, the best option would be a combination of online and face-to-face assessment for reliability and credibility. However, due to its small

scale, the findings of this study cannot be generalized, and more research should be conducted in this area to enhance both the teaching and learning activity.

## 5. Acknowledgments

We would like to thank all the teachers who made the commitment to answer our questionnaire.

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# Growth mindset, CALL, and students as partners – does it work in a primary school context?

Monica Ward<sup>1</sup>

**Abstract.** This paper explores the use of a Computer Assisted Language Learning (CALL), growth mindset infused, student partnership approach to language learning in a primary school context. Early success is important in language learning. Students may doubt their ability to learn a language, especially if they have had a non-positive experience of learning a language. This research study looks at a research intervention for learning Spanish in an Irish primary school. A combination of in-class and CALL resources were used to teach Spanish in six sessions to 120 students from six different classes (10-12 years of age), all of whom were beginners. Most had learnt Irish since four or five years of age and had no previous exposure to CALL, growth mindset, or a student partnership. There were several logistical hiccups along the way, including a low response rate to the end of intervention survey (via questionnaire). However, the overall indications are that the students enjoyed the approach and that it could be used in other contexts.

**Keywords:** CALL, growth mindset, student partnership, primary school.

## 1. Introduction

A growth mindset is helpful for learning (Dweck, 2017). CALL, learner autonomy (Little, Dam, & Legenhausen, 2017) and a student partnership approach (Cook-Sather, 2014) are also helpful approaches to the language learning process. In Ireland, Irish is a compulsory subject for most students and is generally not a popular subject (Darmody & Daly, 2015) and this can impact negatively on future language activities. The motivation behind this research was to see if learning Spanish with CALL resources and a student partnership and growth mindset approach would

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**How to cite this article:** Ward, M. (2022). Growth mindset, CALL, and students as partners – does it work in a primary school context? In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 375-379). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1487>

be logistically feasible in an Irish primary school. A growth mindset approach might have the potential to mitigate some of the negative experiences of learning Irish. This paper reports on a six-week CALL-infused Spanish language course for primary school students (n=120, 10-12 years of age) in an English-medium primary school in Ireland. There were several logistical hiccups along the way, but the feedback from students and teachers (via questionnaires) was positive. This multi-pronged approach provides a template for enjoyable language teaching and learning in a primary school context. This approach could also be used for other languages, particularly less commonly taught languages including Irish (Ward, 2015).

Growth mindset is a belief that abilities can be developed through dedication and hard work (Dweck, 2017). It contrasts with a fixed mindset which is a belief that intelligence and talent are innate and unchangeable. If a learner has had a non-positive experience of learning one (L2) language, this could negatively impact on their learning of another language. Learners could start to think that they are not good at learning languages.

Successful language learning components include engagement, motivation (Dörnyei & Ushioda, 2013), early success, learner autonomy, and an active learning approach. Early success (Guskey, 2021) is sometimes overlooked, but it can be a key element in ensuring that learners continue to persevere when things get difficult. A student partnership approach, particularly giving students choice and autonomy in their learning, is becoming an area of focus at higher education but less so at primary and post-primary levels to date.

In Ireland, students do not learn a Modern Foreign Language (MFL, e.g. French, German, or Spanish) until post-primary school but they learn Irish for 13 years. Their experience is often not very positive but previous research has shown that students like to use CALL resources for Irish (e.g. Purgina, Mozgovoy, & Ward, 2017; Ward, 2007). The motivation behind this research was to see if a growth mindset could help to foster a positive disposition towards language learning.

RQ1. Would it be logistically feasible to deliver a short CALL-infused language course in an Irish primary school?

RQ2. Would the students have a growth mindset after doing the course?

RQ3. Would the students enjoy/not enjoy the approach, including an element of choice on a learning topic)?

RQ4. Could the positive experience with this approach overcome the negative experience of learning Irish?

## 2. Method

In order to test the viability and possible effectiveness of a CALL-infused, growth mindset approach with primary school learners, a tailored Spanish language course was developed. The course was a six-week course (30 minutes each week) and was delivered to six different classes (10-12 years of age, with approximately 20 students in each class). There was a mix of in-class sessions, slides, videos, and quizzes. The students were encouraged to share their own linguistic knowledge from other (home) languages (e.g. Polish or Romanian). The information was conveyed to the students in age-appropriate language. The students were told that ‘everyone can learn a language’, ‘it’s OK to make mistakes’, and ‘Learning a language is fun’ at the start of the six-week sessions. The motivation behind this is that some students think they are not good at languages and ‘cannot’ learn one. They are afraid of making mistakes as their errors (in Irish) are usually highlighted and corrected. They do not consider learning a language (Irish) as a fun activity. They would not have been told these growth mindset messages directly before. The students were encouraged to guess what new words meant and to ask as many questions as they liked.

## 3. Results and discussion

There were several logistical challenges during this research intervention (e.g. teacher illness and other school events). Due to related logistical reasons, the paper-based feedback questionnaire for the students was replaced by a shortened online survey (with only four closed questions and one open question) and the response rate was low (n=32) (much lower than an in-class paper-based questionnaire). Note that the questionnaire used age-appropriate questions. The in-class feedback and enthusiasm from the students and teachers were very positive, but several factors need to be considered. These include the Hawthorne effect and the novelty effect (a new subject, a new ‘teacher’, and a break from normal classroom activities). The results presented here (Table 1) should be viewed with this in mind. The majority of the students enjoyed learning Spanish (87.5%) and they enjoyed the approach (83.9%). Just over half thought they learnt some Spanish (56.3%) and would like to use the same approach to learning Irish (56.2%). The quiz was the most liked

CALL resource. The vast majority agreed that ‘anyone can learn a language’ (94%) and ‘it is OK to make mistakes’ (97%). A majority (63%) agreed that ‘learning a language is fun’. Five of the six teachers responded and they agreed that the students enjoyed the approach and that it would be good for teaching Irish.

Table 1. Summary of student feedback

Question	No	A little	Yes
Did you enjoy learning Spanish?	0%	12.5%	87.5%
Did you learn any Spanish?	0%	43.7%	56.3%
Did you enjoy the approach to learning Spanish in class?	0%	16.1%	83.9%
Would you like the same approach to learning Irish?	21.9%	21.9%	56.2%

Although this was a relatively short intervention, there are several valuable insights to be gleaned. It was logically logistically feasible to deliver a short CALL-infused Spanish course in an Irish primary school (RQ1), although flexibility and adaptability are required. One defect of this intervention is that there was no pre-survey administered to the students in relation to their attitudes towards a growth mindset in the context of language learning. However, the responses from the students indicate that they have taken on board the three main aspects of the growth mindset as outlined to them (it was not explicitly named for them) and they reported a positive attitude towards language learning (RQ2). Even taking all the caveats mentioned above, it was obvious that the students enjoyed the approach (RQ3). They were very engaged during the sessions and the positive experience appears to have offset some of the negative attitudes towards learning Irish (RQ4).

Even though all six classes were in the same school, each class was different (different questions, engagement levels, teacher interaction). There is often an emphasis in some CALL and second-language acquisition research on the use of pre- and post-evaluations of students after a particular intervention. While in some educational contexts this is possible, due to the individual differences in school classes, it can be more difficult in a primary school setting as there are too many different variables.

In terms of limitations, it should also be noted that the students have a generally positive attitude towards Spanish, even before starting to learn the language as it is seen as useful and ‘cool’. The intervention was short and the positive effects may not be sustained over a longer period of time. There would be a need to enhance the suite of resources for teachers and scaffold them to deliver the materials themselves in the future.

## 4. Conclusions

This paper provided an overview of a CALL-infused intervention for teaching Spanish in an Irish primary school context. It aimed to give students a growth mindset to the process so that they would enjoy it and learn more. It allowed them an element of choice as part of the learning process. Overall, the results were positive and could be used as a model for other similar interventions in future.

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# Game based language learning for Irish: noticing errors while playing

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**Abstract.** Game Based Language Learning (GBLL) is an approach to language learning in which learning happens in the process of playing a game. GBLL has several potential benefits including enhanced reading, writing, and cultural awareness. This paper provides a brief overview of CIPHER – Faoi Gheasa, a GBLL app for Irish and learners’ feedback on the game. The app inverts the current Intelligent Computer Assisted Language Learning (ICALL) approach to error detection and it asks players (learners) to spot the deliberate errors (ciphers) in texts that have been changed by an evil character called Sypher. Many elements of game playing are included in the app. It has been played by over 150 primary school learners of Irish. While there is still room for improvement, the overall feedback from the students was very positive.

**Keywords:** ICALL, less commonly taught languages, LCTLs, natural language processing, Irish.

## 1. Introduction

Error diagnosis, feedback, and correction is one area of focus within ICALL research (Heift & Schulze, 2007; L’haire & Faltin, 2003). Learner corpora can provide valuable insights into the language learning process. Analysis of learner corpora can provide error statistics which can be used to create focused CALL resources (Granger, 2003). As is often the case, there are fewer learner corpora for Less Commonly Taught Languages (LCTLs). Often, teachers have to rely on their own experience, intuitions, and anecdotal evidence in terms of error frequency.

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**How to cite this article:** Ward, M., Xu, L., & Uí Dhonnchadha, E. (2022). Game based language learning for Irish: noticing errors while playing. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 380-385). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1488>

Learner corpora are not always readily available to substantiate these teacher intuitions. What can CALL researchers do in this situation? One solution is to gather digital resources to build up learner corpora in LCTLs.

GBLL is an educational approach in which language learning activities happen in the context of a game and are enhanced by rich game mechanics (Liu, Wang, & Lee, 2021). GBLL can encourage reading and writing (Karadag, 2015) and also cultural awareness (Ćosović & Ramić-Brkić, 2020). If learners cannot recognise errors, their learning can become fossilised. It can also inhibit their ability to learn the correct form of vocabulary. GBLL is a useful strategy to motivate learners to read (more enjoyable) texts that they would not normally read and this can help them to acquire new vocabulary and idioms.

There are several challenges to teaching Irish in schools. It has a complex socio-cultural role in Irish society, teachers are not native speakers and from some perspectives it lacks utilitarian value. The orthography is not transparent and it is a morphologically complex language. Although there are some resources for Irish (e.g. Irish WordBricks, Purgina, Mozgovoy, & Ward, 2017, [abair.ie](http://abair.ie)), there is a lack of CALL resources for the language, which impacts on the potential to enjoy learning the language (see Ward, 2014).

Content is critical in any language learning situation. In some CALL apps, the issue of cultural heritage and hinterland is not really addressed – maybe because it is assumed to be understood by the learners. GBLL apps can be a platform for incorporating cultural awareness within the game environment. This paper provides an overview of a GBLL app that encourages learners to notice errors while playing a game.

## 2. Method

Cipher – Faoi Gheasa is a GBLL app for Irish. It centres around an evil character (Sypher) that tries to make Irish mythology and folklore texts indecipherable by deliberately ‘misspelling’ words in the text. The players have to read the text, locate the errors (spells) and find the common features of these errors. They get points for errors spotted and can ask for hints (which cost points) from game characters from Irish mythology. If they are low on points, they can write a sentence in Irish that relates to the story. The game is adaptive and the text level and the game difficulty will change based on the player’s ability. Figure 1 shows a screenshot of the Cipher – Faoi Gheasa game. For illustration purposes,

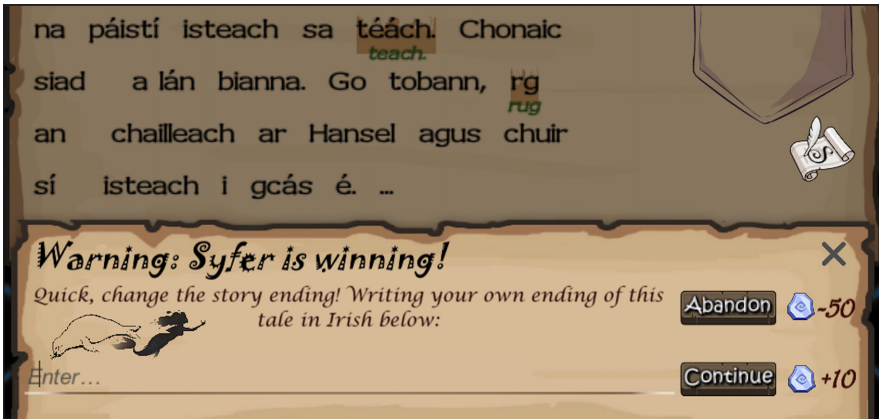
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the errors have been highlighted and the correct version of the word displayed underneath.

Figure 1. Cipher – Faoi Gheasa screenshot



Figure 2. Corpus collection element of Cipher



From a CALL perspective, there are two main aims, namely to gain insights into learners' knowledge of errors through their interaction with the game and to collect a (small) corpus of learner texts from the players. Our GBL approach inverts the traditional ICALL error detection model. Instead of the ICALL resource detecting

learners' errors, the CIPHER – Faoi Gheasa game gets the learner (player) to detect the errors. The CIPHER – Faoi Gheasa pipeline uses several natural language processing tools to create the game. It uses (semi)automatic text pre-processing tools to generate game texts. Figure 2 above shows the learner corpus collection element of CIPHER – Faoi Gheasa. The player is encouraged to write a sentence in Irish to finish off the story before the evil Sypher manages to delete the story forever. More details on the CIPHER – Faoi Gheasa game are available at [Xu, Dhonnchadha, and Ward \(2022a\)](#).

The CIPHER – Faoi Gheasa was initially pilot tested in an Irish-medium primary school and was subsequently tested in an English-medium school. There were nine classes who tested the app with over 150 participants. They ranged in age from nine to 12 years of age. Some of the students played the app in pairs due to logistical reasons and likewise, they filled out an online questionnaire in pairs. There were 64 responses in total.

### 3. Results and discussion

In terms of building a learner corpus, there were two questions: what would the players' level of Irish be and would they be able to write sentences that made sense? Unfortunately, their level was very low and the feature to check that only (reasonably) grammatically correct Irish sentences were entered had to be disabled; 39% of the texts were in Irish, but not relevant to the story, while only 16% were in Irish and relevant to the story. There is a need to enhance this aspect of the app in future versions.

In terms of the game itself, the feedback from students was very positive. It must be borne in mind that the students did not often have the opportunity to use laptops in class and the Hawthorne effect could be in play. Nevertheless, they reported that the game was fun (46%) while only 12% said it was boring, 65% said they thought the texts were at the right level of difficulty for them, and 19% thought they were easy or too easy, while 16% thought they were either hard or too hard. Only 9% thought that learning or reading Irish through the game was bad or very bad, with 18% saying it was OK, 29% saying it was good, and 44% saying it was very good. Table 1 shows a summary of the students' responses.

The learners' ability to write in Irish was limited. There were changes made to the game that would allow them to enter any sentence, regardless of its grammaticality. The learners will need more scaffolding in future to help them

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write relevant, grammatical sentences in Irish. See Xu et al. (2022b) for more details.

Table 1. Summary of student feedback

What did you think of the game?	Were the texts at the right level?	How would you compare learning or reading Irish through the game to normal classroom teaching
Fun (46%), challenging (24%), easy (16%), boring (12%), other (2%)	Too easy (9%), easy (10%), right level (65%), difficult (12%), too difficult (4%)	Very bad (7%), bad (2%), OK (18%), good (29%), very good (44%)

## 4. Conclusion

The GBLL approach was feasible, although some points need to be borne in mind. The learners enjoyed playing the game and they were enthusiastic about it. They even discussed Irish in pairs, something which the teachers mentioned was very rare. The teachers were happy with the game and how their students played with it. There are future improvements planned and research will continue into this novel approach to noticing within a GBLL framework.

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# ESPACE L2: exploring spacing effects in explicit and implicit online learning of L2 English

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Katerina Palasis<sup>3</sup>, and Emilie Gerbier<sup>4</sup>

**Abstract.** Language researchers and teachers have long been interested in the timing of learning, and the distributed practice effect, whereby greater inter-session intervals result in longer retention, is well-known (Kim & Webb, 2022). Many L2 studies have focused on the intentional learning of lexis (Edmonds, Gerbier, Palasis, & Whyte, 2021), neglecting implicit learning and syntactic development (Rogers, 2021). The present project includes both explicit vocabulary learning activities and incidental exposure to a complex syntactic structure via a bespoke online L2 English learning platform. The goal is to investigate the two types of learning in two spacing conditions. This paper describes (1) the learning activities created to present opportunities for explicit vocabulary learning and the concealed syntactic input, and (2) the tests used to evaluate participants' receptive and productive knowledge of target items. It aims to inform computer assisted language learning design with respect to pedagogical progression, learning activities, feedback, and learning schedules.

**Keywords:** second language acquisition, implicit/explicit learning, lexis, syntax, spacing effect, distributed practice.

## 1. Introduction

This paper presents a project on spacing effects in the online learning of lexis and syntax in second language (L2) English: ESPACE L2 (*ESpacement dans*

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**How to cite this article:** Whyte, S., Edmonds, A., Palasis, K., & Gerbier, E. (2022). ESPACE L2: exploring spacing effects in explicit and implicit online learning of L2 English. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 386-391). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1489>

*l'Apprentissage de la Complexité En L2*; spacing in the learning of complexity in L2). The project lies at the intersection of L2 teaching and learning, linguistics, and cognitive science, and involves the creation of an online platform to deliver language learning activities and collect data on learners' performances.

## 2. The L2 spacing effect

The spacing effect has been called “one of the most robust phenomena in experimental psychology” (Ellis, 1995, p. 118) and research in many domains has consistently demonstrated that the organisation of learning sessions over time (spacing) significantly influences memorisation (retention; cf Gerbier & Toppino, 2015). In studies which investigated item learning (e.g. an L2 word and its L1 translation), learners who attempted to retrieve items repeatedly in a single learning session (massed condition) made greater initial gains than those whose learning was spaced over several sessions (distributed condition), but the longer-term retention of the learners on a distributed schedule was consistently superior (distributed practice effect; cf Kim & Webb, 2022). Recent L2 studies have investigated uniform versus expanding schedules (Kang, Lindsey, Mozer, & Pashler, 2014), adaptive spacing (Lindsey, Shroyer, Pashler, & Mozer, 2014), ecological learning contexts (Rogers & Cheung, 2020), and implicit versus explicit learning (Nakata & Elgort, 2020).

The ESPACE L2 project builds on this work by comparing two types of learning – explicit learning of vocabulary and implicit learning of syntax – in two different learning schedules, using a pre-, post-, and delayed post-test design. Participants are non-English majors at the Université Côte d'Azur, randomly assigned to a 48-hour (sessions every two days) or seven-day learning schedule (sessions every week).

## 3. Pedagogical design

The platform includes nine main learning activities organised in three sessions of three activities, focusing on the meaning, form (sound and spelling), then use of 16 English verbs, with immediate feedback to learners after each attempt. In addition to the activities shown in Table 1, the first session included an initial presentation activity (pronunciation, definition, translation, and example sentence for each verb); each session ended with an opportunity to review learning, for a total of 13 exercises taking approximately 110 minutes.



Table 1. Lexical learning activities

	SESSION 1	SESSION 2	SESSION 3
1. MEANING	synonym multiple choice	translation multiple choice	synonym gapfill
prompt	<b>to loathe</b>	Most of us <b>loathe</b> asking for help, so we continue alone	The TV show received good reviews from the critics, but was _____ by the public
answer	to hate someone or something	<i>détester</i>	loathed
2. FORM	multiple choice	anagram	dictation
prompt	[audio]	A T L O E H	[audio]
answer	loathe	L O A T H E	loathe
3. USE	gapfill multiple choice	dialogue listening multiple choice	dialogue listening sentence completion
prompt	[text] The UK Independence Party (UKIP) has always campaigned for Britain to leave the European Union. Because it focused only on this question, some commentators wondered how UKIP could be so successful. Indeed, only the fact that UKIP supporters _____ continental Europe keeps them together.	[text] Angela is complaining to her friends about her job. Her friends ask:  [audio] What do you <b>loathe</b> doing the most?  [prompt] Her friends ask what	[text] Julia and Frances are discussing the difficulties of campaigning for climate change.  [audio] Julia: Of course, lots of climate change protestors absolutely loathe the media. Frances: Sorry I didn't catch that. What do the protestors loathe?  [prompt] Frances is wondering what
answer	<b>loathe</b>	Angela <b>loathes</b> doing the most	the protestors <b>loathe</b>
4. SELF-EVALUATION	Indicate for each of 16 verbs - I don't know it yet - I know it a little - I know it well	as Session 1	as Session 1

Table 1 shows how the learning programme progressed from recognition to more elaborate production tasks; learners' progress through the sessions and activities was also controlled to prevent repetition, to record only first responses, and to keep the number of exposures to target items constant.

Concerning the choice of learning targets, the verbs selected for explicit learning met three criteria: they belonged to the 5,000-6,000 frequency band, were characteristic

of learners at C2 level in the English Vocabulary Profile, and were not French cognates. The target sentences for implicit syntactic learning were embedded in the third activity of each session through the wording of the example paragraphs and answer prompts, and were controlled for lexical variation.

#### 4. ESPACE L2 research design and test battery

Participants connected to the platform six times: (1) to enrol, provide informed consent, and give a linguistic biography, (2) to take five pre-tests listed in [Table 2](#) and schedule learning sessions, (3-5) to complete the learning sessions, including an immediate post-test at the end of Session 3, and (6) to take the delayed post-test.

Table 2. Tests of proficiency, vocabulary knowledge, and syntactic development

	Test battery	Pre-test	Immediate post-test	Delayed post-test
1. PROFICIENCY	V_YesNo (Meara & Miralpeix, 2016)	√	X	X
2. VOCABULARY	Modified Vocabulary Knowledge Scale  (Paribakht & Wesche, 1993) - I've never seen this verb - I've seen this verb but I don't know what it means - I've seen this verb [provide synonym/translation/definition and use in sentence]	√	√	√
3. READING	Self-paced reading  (reaction times for target and spillover segments)	√	√	√
4. LISTENING	Aural acceptability judgement  (correct/incorrect scores on grammatical and ungrammatical exemplars)	√	√	√
5. WRITING	Sentence completion  (production of target structure)	√	X	√

The first test listed in [Table 2](#) situates the learners in terms of general proficiency, while the second provides our measure of vocabulary knowledge before and after the intervention. Since implicit syntactic learning via 48 exposures to examples

of the target structure is likely to be difficult to detect, three syntax tests were included, ranging from the most implicit measure, self-paced reading, through an acceptability judgement task, to the most explicit measure, sentence completion (cf Vafae, Suzuki, & Kachisnke, 2017). The project platform also collects responses for each participant on all learning activities.

## 5. Conclusion

The ESPACE L2 project allows for the collection of rich data for the investigation of spacing schedules for lexical learning and syntactic development. Results will contribute to our understanding of the effects of timing of practice and evaluation sessions in both explicit and implicit conditions of L2 learning.

## 6. Acknowledgements

We are grateful for the financial support of our university's School of Arts and Humanities (EUR CREATES) and for additional funding from our research laboratory Bases Corpus Langage (UMR 7320). We thank colleagues Ana Chiaruttini, Alice Latimier, and Maria Kihlstedt for helpful discussions in the early stages of the conception of this project.

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## A study on cultural identity in the textbooks of an intercultural communication course

Zhu Zhu<sup>1</sup>, Li Cheng<sup>2</sup>, and Yue Fan<sup>3</sup>

**Abstract.** In recent years, increasing attention has been paid to the effects of cultural factors on cultural identity in the field of teaching Chinese as a foreign language. The central issues include the kind of knowledge structure and value orientations involved in Chinese teaching and Chinese textbooks, the responsibility teachers take when educating people, and ways of further optimizing and improving the quality of education. This paper reports a study exploring the cultural factors in a course of intercultural communication offered to Chinese language majors at a university in Beijing. The researchers followed the students in this course for four months, from September to December of 2021. The researchers analyzed the value orientations of the course textbook *Boya Chinese* and the ways of using the textbook in classroom teaching. The purpose was to identify the basic characteristics and existing problems of the textbook and its relationship with language teaching. Through data analysis, four dimensions of cultural identity were identified. It is suggested that through strengthening the blended mode of online and offline teaching, teachers can help students understand and appreciate the Chinese culture and language so as to build a community with a shared future for mankind.

**Keywords:** cultural identity, cross-cultural communication, *Boya Chinese*, field analysis.

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**How to cite this article:** Zhu, Z., Cheng, L., & Fan, Y. (2022). A study on cultural identity in the textbooks of an intercultural communication course. In B. Arnþjórnisdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouésny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 392-398). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1490>

## 1. Introduction

In recent years, the influence of cultural factors on cultural identity has received increasing attention in teaching Chinese as a second language (Sun, 2021). Cultural identity is a sense of group cultural identity and a sense that an individual is influenced by group culture. Many researchers have studied the cultural factors of foreign Chinese teaching materials (e.g. Chen, 2022; Du, 2021; Luo, 2022; Xu, 2013). There is not enough awareness of the knowledge structures and value orientations involved in language teaching and materials and the responsibilities they assume (Bai & Zhang, 2022).

The purpose of this study is to clarify the basic characteristics of the Chinese textbook *Boya Chinese*, identify the problems, and seek possible solutions in relation to Chinese language teaching and learning. The research questions are as follows.

- (1) What are the cultural identities presented in the course textbook of ‘Intercultural Communication’?
- (2) What are the characteristics of the students’ cultural identities?
- (3) How can the teacher integrate cultural identities presented in the materials through teaching?
- (4) How can the teacher integrate students’ identities through teaching?

## 2. Method

This study was conducted in a second-year core course ‘Intercultural Communication’ offered to the Chinese language majors at a university in Beijing. Data included a questionnaire survey, classroom observations, eight semi-structured interviews, and the textbook of the course.

The questionnaire method is a four-month follow-up survey around online teaching in the fall semester of 2021-2022; 100 questionnaires were collected and the results were analyzed using SPSS. The interviews were conducted from September to December 2021 with eight international students in a one-hour interview each.

### 3. Data analysis and discussion

#### 3.1. Cultural identity revealed in the textbook

##### 3.1.1. Theme

The analysis of themes is divided into political, social and cultural, historical and geographical, moral and quality, economic and commercial, science and technology, and environmental protection (Wang, 2021). There are 16 topics in the textbook *Boya Chinese* (Intermediate I, Table 1, Li, 2012).

Table 1. Thematic education categories in *Boya Chinese*

	Moral category (2)	Socio-cultural category (9)	Science and technology category (3)	History and Geography Class (2)
Boya Chinese (Intermediate)	Love Rose	Three E-mails	Children learning language	Sun Yat-sen
	Your husband is so nice.	Diary	Color and personality	Wu Zetian
		Study Abroad in China	What should be done	
		Is she our daughter?		
		Recordings		
		Music and Neighborhood Girls		
		Eat in China		
		Treating guests to dinner		
		National superstitions		

##### 3.1.2. Character image

The characters in the textbook present their own viewpoints (Sun, 2021). For example, the description of the characters of Sun Yat-sen and Wu Zetian in the textbook, which implies the language, behavior, and intercultural communication functions. Through the interactions using the characters, intercultural

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communication problems are highlighted and their intercultural communication skills are cultivated.

### 3.1.3. Geographical distribution

Bourdieu and other researchers argue that all human activities take place in different socially constructed fields (Bourdieu & Wang, 1995). Different localization has different cultural capital, which leads people to compete and chase each other. They accumulate capital continuously, in order to maximize their own social advantages.

The analysis shows that the textbook showed the spiritual outlook of China's big cities from texts such as 'Eat in China' and 'Study in China', which changed their stereotypes.

### 3.1.4. Cultural factors

This study uses the database statistical model to investigate the texts with Chinese cultural factors in the book. Among them, the overall presentation of cultural factors can be divided into eight parts, accounting for more than half of the total number of courses (Table 2). Also, there are Chinese cultural factors in 43 classes.

Table 2. Cultural factors in *Boya Chinese*

Broad categories of cultural factors	Cultural Factors Subcategory	Occurrence Number	Expression of cultural factors
Geographical overview	City Introduction	10	Harbin, Beijing, Xi'an, Xi'an, Xiangshan, Macau, Guangzhou, Wuxi, Suzhou, Hangzhou, Liuzhou
	Places of interest	3	Great Wall, Forbidden City, Terracotta Warriors, Horses of Qin Shi Huang
	River	2	Yellow River, Yangtze River
	Natural Scenery	1	Mount Tai
	Special building	1	Temple
Diet	Special Diet	2	Sweet and Sour Pork, Tofu
Interpersonal	Appellation	5	Boss, husband, leader, elder sister, brother-in-law
Modern Life	Daily Life	1	Big Stall
People Events	Historical figures	5	Sun Yat-sen, Wu Zetian, Emperor Taizong of Tang, Emperor Gaozong of Tang, Empress Wang



Country Profile	Administrative Area History	5	Northeast, Guangdong, Shaanxi, Sichuan, County
		3	Qing Dynasty, Republic of China, Tang Dynasty
Literary Arts	Idiom	2	Exactly the same, follow the local customs
Language and Literature	Language	3	Mandarin, dialect, native language

### 3.1.5. *Characteristics of students' cultural identity*

The questionnaire shows that 93.4% of the international students are satisfied with the distribution of the topics in the textbook, which contains Chinese traditional culture, 97.5% of the international students said that they had a deep understanding of Chinese traditional culture through the characters of Sun Yat-sen and Wu Zetian, and 55.7% of the international students studied the characters and went to the traditional Chinese cultural places involved in the characters; 92% of the international students visited the Forbidden City in Beijing, and 56% of them visited the cities mentioned in the text.

Seven of the eight international students said in the in-depth interview that, of the cultural factors, they were most interested in Chinese food culture and had an admiration for historical celebrities. More than 80% of them said they did not know much about the national conditions. They also did not particularly understand the wording of interpersonal communication.

## 3.2. **Integration of the cultural identity of the textbook and the students' cultural identities**

Teachers create a positive atmosphere for teaching to effectively integrate the cultural identity of the material with the cultural identity of the students.

First of all, for teachers, they should constantly improve their own learning. Secondly, they should use teaching to enhance students' values and students' cultural safety awareness as well.

In terms of teaching materials, we should pay attention to the integration of educational objectives and teaching materials, rationally compare the differences between the East and the West in teaching materials, and actively put forward suggestions for reform and innovation.

## 4. Conclusions

In this study, the researchers explored cultural identity and identification in the course textbook of ‘Intercultural Communication’. It is suggested that the role of culture be given full play to promote the acquisition of Chinese skills, the learning of verbal knowledge, and the strengthening of thinking and political awareness to a high degree of intermingling, so that international students can become narrators of Chinese stories, enhance their personality to integrate ideological political education into education.

The inspiration for teaching is, firstly, to improve the educational objectives; secondly, to pay attention to the integration of text selection and educational objectives; thirdly, to improve teachers’ abilities to educate people and consciously strengthen the leadership and cultivation of students’ values; and fourthly, to improve international students’ abilities to analyze, identify, and criticize foreign Chinese textbooks independently.

## 5. Acknowledgments

This research was supported by the research fund (Grant No: BUPT-SH-SPRC-202101).

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The 2022 EUROCALL conference was held in Reykjavik on 17-19 August 2022 as a fully online event hosted by the Vigdís Finnbogadóttir Institute for Foreign Languages, the University of Iceland, and the Árni Magnússon Institute for Icelandic Studies. The conference theme was *Intelligent CALL, granular systems and learner data*.

This theme reflects the newest developments in the field of technology for language learning. Subfields such as natural language processing and machine learning not only enable smoother spoken and written communication between human learners and computers, but also offer ways in which language learning can be tailored to the needs of individual learners. By adding components of automatic speech recognition, text-to-speech systems, automatic feedback mechanisms, and tracking systems monitoring learners' progress and their use of tools, applications are becoming better targeted. All of this is used to optimise the learning experience of individual learners.

This volume includes 66 short papers by some of the EUROCALL 2022 presenters and it offers a combination of research studies and theoretical papers reflecting the subthemes of the conference. The articles are ordered alphabetically.



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