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Interactional practices in technology-rich L2 environments in and beyond the physical borders of the classroom

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Abstract

The current special issue is dedicated to studies exploring social interaction in second language educational environments that feature technology. In this introduction article, we contextualise the empirical studies included here with respect to the changing role of technology in education and situate them in the research tradition of multimodal and ethnomethodological Conversation Analysis (CA). We also present the individual contributions and briefly discuss how they promote a conceptualisation of classrooms as pedagogically meaningful material-technological ecologies for teaching and learning actions rather than a physically delimited space.

Introduction

The global crisis of Covid-19 has pushed teachers to confront the challenges of online teaching and learning, many of whom had little to no experience in digital educational environments. This situation has highlighted the need for more research-based knowledge on the intricate digital ecologies of social interaction taking place between human-human, humans-device and humans-device-world as mediated through different technologies, and how they may impact education. At a time when instructional realities seem to be changing, it is important to acknowledge that online instruction is by no means a new phenomenon, and that technology has played an important role in language teaching and learning long before the Covid-19 pandemic. As Hodges et al. (2020) point out, there is a difference between carefully planned online and blended teaching – that has been carried out in many cases for decades and with significant success – and the kind of *emergency remote teaching* (ERT) that the pandemic has brought about (see also González-Lloret et al. 2021; OECD 2021a).

A number of researchers (e.g. Balaman and Sert 2017; Dooly and Tudini 2016; Hellermann et al. 2017; Jakonen and Jauni 2021; Musk 2014; Nguyen 2017; Rusk 2019; Tudini and Dooly 2021) have been immersed in the study of interactional practices in technology-rich learning environments for some years now. Capitalizing on their rich knowledge on the subject,

this special issue brings together papers that apply the micro-analytical tools of ethnomethodological Conversation Analysis (CA) to examine educational interactions in online gaming, computer-supported collaborative group work, and video/audio-mediated environments. Given recent global events and ensuing challenges of ongoing technologisation of education, we believe that the articles in this issue are a timely contribution to readers in various fields including, but not limited to, classroom discourse/interaction, L2 learning and teaching, L2 pragmatics, language teacher education, computer assisted language learning (CALL), and intercultural communication.

Moving forward from the current pandemic situation, it seems inevitable that interactions in technology-rich environments (e.g. fully online, hybrid, and computer-supported in-class environments) will remain essential to pedagogical designs in the future (OECD 2021b). An expanding digitalised world calls for new kinds of skills from teachers, learners, and stakeholders in educational institutions. Decreasing dependency on a shared physical space and a greater prominence of online services have resulted in an emergence of digital ‘nomads’ who might live and work in different countries (OECD 2021c). Moreover, many of today’s face-to-face interactions involve technology of some kind. It has been reported that there is correlation between the acquisition of specific digital skills as well as general academic achievement (Hu et al. 2018; OECD 2019), underscoring the potential for large gaps in educational equality if these competences are not introduced into teaching curricula. Altogether, these developments herald a need for in-depth analyses of how technology is interwoven in different educational spaces and levels as well as types and patterns of social interaction. Against the backdrop of these exigencies and drawing from the established research tradition and micro-analytical lens of multimodal ethnomethodological CA, this special issue aims to provide new empirical insights into how technology is used by L2 learners, gamers, teachers, tutors, teacher trainers and trainees *in situ*. The articles span a wide range of technology-rich L2 contexts to explore the relationship between technology and pedagogical interaction in computer-supported collaborative work in L2 classrooms, online tutoring, language teacher education, and multilingual and educational e-sports game play.

Examining social interaction in technology-rich L2 environments

While technology, in different manifestations, has for a long time been part of teaching and learning, many feel that in recent years its role has become more prominent in classrooms and

classroom interaction (see Thorne and Hellermann, this issue). There is an increasing awareness of the complexities of different online and ‘hybrid’ ecologies of action, such as when geographically distant student groups telecollaborate with each other using videoconferencing (e.g. Balaman 2019; Balaman and Pekarek Doehler 2021; Ekin et al. 2021; Dooly and Tudini 2016; Tudini and Dooly 2021) or when classroom-based participants interact with remote students by way of embodied technological proxies such as telepresence robots (Jakonen and Jauni 2021).

At a time of technological expansion, it is useful to remember that no technology on its own can guarantee that learning will take place, and that many of the technological devices, tools, applications, and platforms used today in schools were not initially designed for education. Teaching and learning take human effort, and as for example Colpaert (2020) reminds us, the implications of technology stem from how it is employed to create multimodal learning environments. If we thus wish to understand the role of technology for L2 instruction and learning, we need to empirically investigate how participants use, operationalise, and make sense of technology in situated cooperative activities: in other words, how they interact with each other and with the help of technology. With this in mind, the papers in this issue maintain a social, situated, and interactional perspective towards technology, focusing on its agentive and enabling role as well as interactional affordances and challenges.

An analytical focus on social interaction in technology-rich instructional environments can also push forward pedagogical development. In addition to everyday technologies, recent CA research has shown that educational technologies designed to foreground social interaction can expand our understanding of pedagogical spaces and practices (see e.g. ChronoOps, reported in Hellermann et al. 2017; Thorne et al. 2021; the VEO app described by Seedhouse 2021; Language Kitchen, as analysed by Kurhila and Kotilainen 2020; Seedhouse 2017; and, more recently, DIGITASK, which draws from Balaman 2018; Sert and Balaman 2018). In this way, interaction constitutes an entry point for developing teachers’ professional action, learners’ linguistic skills and competences, and language learning and teaching in our modern-day technology-rich world. Investigating the complexity of these interactions can also help researchers pinpoint areas for further reflection and development regarding existing research methodological approaches. Indeed, the articles in this special issue illustrate innovative ways for tackling analytical challenges related to collecting, transcribing, and presenting interactional data from co-present, video-mediated and virtual settings, while at the same time, accentuating emerging analytical complications (see Thorne and Hellermann, this issue). The

articles in this issue contribute to the body of work exploring these expanding areas of study. CA research capitalises on the analytical value of the participant's (emic) perspective to situated activities, and the studies in this issue demonstrate ways to consider what this might involve in interactional contexts where participants have very different visual, embodied, and sensory access to each other and their environments.

An overview of the contributions

The studies presented in this special issue shed light on how digital resources are interactively employed for L2 learning, usage, teaching, and teacher education, both in and beyond the physical borders of a classroom. Paying close attention to participants' situated practices, the authors consider how people make sense of technological affordances and transform them into pedagogical possibilities in a variety of face-to-face, hybrid, and fully online ecologies of teaching and learning. In some cases the participants are physically co-present in a classroom as they engage in computer-supported work (Musk, this issue) or design video-mediated pedagogies (Badem-Korkmaz et al., this issue). In other settings, the participants are geographically dispersed as they participate in multilingual online gaming (Rusk and Ståhl, this issue), online L2 tutoring (Nguyen et al., this issue), and telecollaboration between groups of student teachers (Dooly and Tudini, this issue). Given the importance that technology already holds for education, and the growing impact it will very likely continue to have as technological innovation offers possibilities for enhanced pedagogical interventions, learning opportunities, and assessment practices (OECD 2020), these articles provide a springboard for further exploration and creative thinking regarding how education can meet diverse and complex learner needs.

In the first empirical study, **Nigel Musk** explores how Swedish pupils use online translation tools (OTTs) such as Google Translate to address lexical gaps that surface during collaborative writing tasks in the L2 (English) classroom. The study shows how pupils use OTTs as epistemic resources in word search activities to check unknown or forgotten words, to find synonyms, and to resolve disputes. In doing so, Musk uses augmented multimodal transcriptions that make analytically available how collaborative writing emerges through participants' typing actions. Based on close sequential analysis, Musk discusses how the technological features of an OTT shape its pedagogical implications, and what might be

optimal (interactional) strategies for using such tools, thus responding to Colpaert's (2020) call for considering pedagogical appropriateness of technology.

Hanh thi Nguyen, Ann Tai Choe, and Cristiane Vicentini (this issue) also investigate the interactional unfolding of online search activities, but do so in a context that is very different from Musk's. Their case study examines online searches in the physically distributed setting of a Skype-based conversation-for-learning between an English-language tutor and a tutee. Conceptualising cognition and learning as social action and accomplishment, the authors zoom in on a learning trajectory that takes place through participants' shifting orientations to a lexical item ('corkscrew'). The analysis details how participants verbalise to each other their individual online searches on their own computers, making them an accountable part of the ongoing discussion activity. Compared to Musk's article (this issue), the geographically dispersed participants have a more restricted access to the other participant's perspective, and verbalising their online context, activities and search results to each other allows them to mediate between public and private activities.

The paper by **Fredrik Rusk and Matilda Ståhl** (this issue) examines a broadened classroom context in which a group of geographically dispersed students are playing a multiplayer video game for course credits. The gameplay is part of an e-sports programme at a vocational school that the Finnish-Swedish bilingual students attend. This serves as an example of how institutions are beginning to recognise the role of technology in an expanding digitalised world (OECD 2021b) and tap into its extramural resources (Sylvén and Sundqvist 2012). Rusk and Ståhl explore interactional and multilingual competences involved in the students' in-game practice of 'callouts', which are lexical references to an in-game place where their opponents are located. Drawing on Swedish, English and Finnish, the participants coordinate locations and movements on the screen as seen through their avatars and from different visual perspectives. Resembling the study by Nguyen et al., the geographically dispersed participants in Rusk and Ståhl's article have very different (visual) perspectives; yet, they have to maintain an intersubjective sense of the unfolding events in real time. This not only calls for distinct competences from players but also makes transcription and analysis of social action very complex.

Shifting the focus to teacher education, **Melinda Dooly and Vincenza Tudini** (this issue) present insights into another geographically dispersed education setting and look at online interactions between student teachers (pre and in-service) as they collaboratively reflect on what they have learnt during a semester-long course on technology-infused language

teaching approaches. The authors analyse how the participants demonstrate their knowledge and understanding of telecollaborative project-based language learning during one of their final online meetings. In their analysis, the authors place a spotlight on the student-teachers' use of the different technological functions available in the videoconferencing platform (camera, text chat, editing tools) along with utilities outside the platform (computer notes, browser, external text chat). Along the lines of the OECD's (2020) proposal, this analysis highlights how the use of these features help shape and organize the participants' display of knowledge synthesis through technologically-supported mutually coordinated interaction. The article underscores the intricate digital ecologies of social interaction taking place between learner-device-learner, mediated through different technological affordances as selected and used by the participants.

Also focusing on teacher education, **Fatma Badem, Semih Ekin, and Ufuk Balaman** (this issue) explore how pre-service teachers (PSTs) collaboratively design online learning environments, but do so in a face-to-face setting. The authors describe the procedural unfolding of a pre-service language teacher education cycle across multiple activity stages (see also Ekin et al. 2021). The paper specifically deals with the whole-class feedback sessions in teacher training classrooms, and closely examines the interactional practice of PST resistance to teacher trainer advice. The authors analyse how PSTs engage in resistance to display and defend their professional knowledge about a Virtual Exchange task they have designed. Overall, the paper shows a pedagogical pathway to equip PSTs with the technological and pedagogical competences required for the design of technology-rich L2 environments (OECD 2021b) and present ways to tackle the methodological challenges in tracking the multiple language teacher education procedures oriented to the design of technology-rich L2 learning environments.

Wrapping up the issue, **Steve Thorne and John Hellermann** critically examine the contributions and discuss the implications of technology-rich L2 environments for L2 use, learning, teaching, and teacher education. In their coda, Thorne and Hellermann spotlight the way in which these foci provide insight into the "intersubjectivity and conditions for engaged learning" (p. X?) in the myriad of technology-rich ecologies that are fast becoming common in education centres around the world, and the kinds of research prospects these ecologies present.

Concluding words

Altogether, the empirical contributions to this special issue illustrate the rapidly evolving landscape of technology-rich educational environments, in particular how educational interaction is almost inevitably mediated, in some way or another, through technology. The articles highlight how technology is ubiquitous in so many aspects of our lives that it is no longer feasible to consider technology use as something that involves merely technical skills. Technology is used to collaboratively construct knowledge, to display knowledge, to coordinate strategies, and to carry out cooperative peer work. By looking closely at the ways in which interactants organise themselves with and through technology, a fine-tuned analysis can put into sharp relief learning moments in technology-rich environments.

The studies in this issue also challenge the notion of ‘classroom’ as limited to a physical space, place, or time, just as we can no longer consider learning as taking place in formal educational settings only. Nearly two decades ago, Jones (2004) indicated that the concept of ‘classroom’ must be expanded to encompass a material/technological ecology for teaching and learning actions in which the agency of the human and non-human interactants take on a far broader notion than the physical borders and features of the classroom. Along somewhat similar lines, in the editorial to the very first issue of *Classroom Discourse*, Walsh (2010) suggested that the growing role of technology in teaching had come to mean that “the traditional physical boundaries of the classroom no longer apply” (p. 1). By 2022, this has become even more pronounced, not only due to the aforementioned pandemic which has moved so many teachers and learners online, but also, as shown in this issue, because the range of opportunities for creating new kinds of learning spaces continues to broaden. It is increasingly more common for teachers and learners to explore online games, telecollaborative environments, hybrid environments, the use of Artificial Intelligence, and robots (OECD 2021b), which makes understanding the interactions that take place in these contexts vital in order to promote better pedagogical design and use of these environments. But we must also be careful not to throw the proverbial baby out with the bathwater. Several articles in this issue depict technology-rich educational contexts which take place inside more traditionally recognisable classrooms, yet with a reach far beyond their physical walls, through virtual worlds of games and dictionaries that contain vast information that was unavailable to the most learned of scholars of yore.

Inevitably, exploration of this nature is not without its challenges, and this special issue does not shy away from describing the difficulties of teaching and learning online, the interactional consequences and barriers to integrating technological tools to teaching and

learning processes, the obstacles that must be faced for effective pedagogical design and research procedures for technology-mediated settings, and potential hurdles regarding positive interactional outcomes stemming from informal learning practices such as gaming. However, these challenges are far outweighed by the new insights on the organisation of technology-rich L2 interaction across a range of contexts, in and beyond the physical borders of classrooms, that this special issue hopes to bring to readers.

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