Qualitative Research In Online Language Learning: What Can It Do?

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ABSTRACT

This article explores the theoretical foundations of qualitative research in online language learning. It will look at the distinction between offline and online language learning and discuss whether different ways of knowledge generation are appropriate for those different learning environments. Quantitative and qualitative methodologies will be examined and their fit with various learning theories evaluated. Fundamental theoretical differences between epistemologies supporting a realist ontology and those favouring relativist ontologies will be presented and set in the context of online language learning research. Finally, an argument will be presented that in a sociocultural framework, going beyond quantitative research approaches is necessary to adequately understand the experiences of learners and teachers who share a common interest in novel digital environments.

1. INTRODUCTION

In this article we consider the potential of qualitative research in the context of exploring computer-mediated communication (CMC) in language learning. This article lays the theoretical foundations and argues for necessary changes in research practice as certain more traditional computer-assisted language learning (CALL) approaches are shown to be unsuitable.

Many researchers in the field of language learning use qualitative methodologies, working from a sociocultural episteme. Applying these well-established approaches to computer-assisted language learning and teaching settings allows us to examine a range of areas, from trying to understand how learners develop a second language using digital environments as mediating tools to how they co-construct knowledge with others. However, we would also like to suggest that the processes that can be observed, described and analysed in online language learning settings (e.g. in relation to communication and interaction) are different from those in face-to-face language classrooms and that research into face-to-face language learning and research into computer-mediated language learning are substantially different forms of knowledge generation. We therefore need to determine how they differ and why different methods of investigation are required.

The different materiality of online environments compared to face-to-face classrooms means that learning happens in different ways. We will thus be looking at the distinctiveness of computer-mediated language learning online and claim three key differences to face-to-face language learning: Firstly, the physical and often temporal distance in online environments has implications on learners' shared understanding and successful communication. Secondly, the online medium affects the modes used for communication and meaning-making. And thirdly, language learners today have access to

different potential interactants through the new digital media. These key differences relate to the kind of learning potential that the different materialities afford in terms of time and space as well as in terms of modes of communication and interaction and in terms of interactants – materialities that have shaped (and continue to shape) the assumptions about learning and the practices in particular learning contexts. We will explore how this impacts on research and the ways of knowing enabled by researching online communication.

In the following section we will start off by examining different ways of knowing and how they link to different philosophies and scientific paradigms. We will discuss the predominance of positivist approaches to computer-assisted learning in general and CALL in particular and outline our critique. In Section 3 we explore the foundations of research into CALL in terms of epistemology and ontology. In Section 4 we will extend the argument for going beyond quantitative methods to researching online language learning and in Section 5 we will link this to a sociocultural approach to language learning and teaching. In Section 6 we will focus on language learning in online environments where we will discuss the material differences between face-to-face and online language learning outlined in the paragraph above and the implications these have on learning. In Section 7 the focus shifts to examples of research into online language learning and teaching. We will examine what kind of information we need in order to make claims about meaning making online and how our understanding of online environments as learning spaces shapes the direction of research. We will critically evaluate whether a shift in understanding temporality necessitates a change in claims about causality and how this influences our understanding of learning, learners, and an online teaching culture. We conclude the article by summarizing what qualitative approaches to CALL research can offer.

2. QUANTITATIVE APPROACHES TO RESEARCHING ONLINE LEARNING

Online activity provides the researcher with a plethora of data, recorded in ever-increasing detail. So it is tempting to choose quantitative approaches, collecting as much detailed information as possible and relying on at least partially automated data analysis and interpretation processes, using for example learning analytics. As Buckingham Shum and Fergusson (2012) explain, learning analytics goes back to business intelligence and data mining – methods that businesses started to use in the early 2000s "to understand internal organisational data, and external consumer behaviour" (Buckingham Shum & Fergusson, 2012, p. 3). Educational institutions soon recognized the potential of these methods for exploring student behaviour, and learning analytics was developed, an approach that "involves the measurement, collection, analysis and reporting of 'big data' related to learners and their contexts, with the intention of providing actionable intelligence that supports teaching and learning" (http://www.open.ac.uk/iet/main/research-innovation/learning-analytics).

From an empiricist or neo-empiricist epistemological perspective, it makes sense to trust in the increasing accuracy of measurement and at the same time build in safeguards against a contamination of data by observer bias (i.e. the observer's choices about time, width, density and depth of data that create implicit interpretations) and observer influence (i.e. the observer's presence that changes the observed). As Denzin (2009, p. 139) shows, the 'evidence-quality-standards discourse' has been gaining ascendency in 21st century research, with interpretive research being sidelined, and kudos as well as funding following what is generally deemed to be evidence-based research that makes use of methods such as randomized control trials or pre-test–post-test studies. An examination of the latest editions of six highly rated journals into language learning and technology (2 based in the US, 2 in Europe and 2 in Asia) shows that quantitative, experimental approaches are used more frequently than either qualitative or mixed methods (15/34). Out of the 34 articles seven studies use a mixed methods approach, combining quantitative and qualitative methods; seven studies use qualitative methods; four either provide a synthesis of studies or analyse meta-studies; and one presents a literature review.

However, we would like to ask the question if these quantitative approaches are appropriate in a world where simple causal links are being questioned more generally and in the discipline of education particularly where a key research focus is understanding human behaviour. In support of this argument we cite Denzin's summary of Maxwell's (2004a, 2004b) position, who contends the following:

the model for what has been called scientifically based research] assumes a narrow, regularity view of causation, privileges a variable-oriented, as opposed to a process-oriented view of research; denies the possibility of observing causality in a single case; neglects the importance of context, meaning and process as essential components of causal and interpretive analysis; erroneously asserts that qualitative and quantitative research share the same logic of inference; presents a hierarchical ordering of methods for investigating causality, giving priority to experimental and other quantitative methods (Denzin, 2009, p. 145).

Research into online language learning deserves a shift away from the model used in the natural sciences towards an exploration of the process of meaning-making in shared online spaces which demands careful scrutiny of the context. Some of the factors that impact on online learning are not yet established but are being experienced increasingly while online communicative tools are being shaped into learning and teaching spaces (Shi and Stickler, 2018; Kern, 2014).

3. ONTOLOGY AND EPISTEME: THE FOUNDATIONS OF OUR RESEARCH

Choosing one's methods of enquiry is not simply a question of accuracy, convenience or skill; it has deeper and more far-reaching implications, linking our findings to our theoretical stance, our beliefs about the world and about truth. Our ontology, that is, what we believe the world is, and our epistemology, that is, how we think we can achieve knowledge or approach truth, are important elements of research (Twining, Heller, Nussbaum, & Tsai, 2017), whether we acknowledge them explicitly (see e.g. Braun & Clarke, 2006) or tacitly assume a particular stance, for example by following the requirements of evidence-based research, by claiming causality for our evidence chain or by assuming that certain rigorous methods will result in findings that are true. Before considering a number of methods and their suitability for qualitative approaches, we will therefore look more closely at the foundations of so-called evidence-based research, its underlying assumptions and associated learning theories, as well as at alternative approaches. We will also consider which avenues are worth pursuing in online language learning research.

Whereas learning theorists have moved away from behaviourism based on training effects and positive vs. negative reinforcement, this theory still provides the best fit for studies using linear cause-and-effect explanation models. A randomized control trial, for example, assumes that the same effect can be achieved (i.e. caused) repeatedly under the same, strictly controlled circumstances by triggering the stimulus. In classic behaviourist theory (Todd & Morris, 1986), the intermediary processes are programmatically ignored; so, all considerations of participants become irrelevant. Experimental studies in a positivist and post-positivist paradigm using controlled trials tend to focus on one or two factors at a time to ensure comparability and replicability. Standardized instruments and procedures are used as arguments to claim reliability and generalizability of the findings, with researchers working on the assumption that cause-and-effect relations are linear.

While these positivist and post-positivist methodologies are still applied to language research, they do not fit with a more complex sociocultural framework, nor do they address issues raised by language learning research based on sociocultural learning theory (e.g. Warschauer, 2005). A theory that grounds learning in complex interactions between external and internal factors, individual psychology, human interaction, societal constraints and historical and cultural institutions, to name but a few, is ill served by an episteme that assumes one-directional cause-and-effect structures or reduces the field of investigation to one or two factors at a time. Constraining such complex phenomena at

the intersection of social, institutional and cognitive domains unnecessarily reduces the potential of research into online language learning and teaching.

Our ideas of what counts as knowledge are inextricably linked to our beliefs about truth and the world around us, our ontology. In short, a realist ontology, for example, claims that there is one objective reality that can be investigated regardless of individual differences between researchers or historical influences on their institutions. Relativist ontologies cast doubt on the conceptualisation of truth as unified and indestructible, by pointing out differences in human experience influenced by culture, society, history, etc. that make us experience the world differently. Claiming one version of this perceived world as privileged over others is caused by power structures and hegemonial discourses of science and is not in itself a proof for a better understanding.

Epistemologies, or our theories of how knowledge is generated or discovered, follow our ontologies. Positivist or post-positivist epistemologies are based on a realist ontology where the refinement of methods and their careful application seemingly unfettered by human influence can achieve an ever closer approximation to truth. Knowledge can be achieved when our (justified) beliefs about the world overlap with the truth. The notion of justification is introduced to distinguish between accidental truths, that is, beliefs that are not justified but randomly generated and just happen to coincide with something that is true, and truth. Based on the classic understanding of the Vienna Circle and expanded by Karl Popper in 1935 into *The Logic of Scientific Inquiry* (2002), the idea of the justification of beliefs has become the foundation of scientific research. Researchers start by positing a hypothesis (or belief) and reasons to believe it (justification); then they find a method to prove or disprove it (the test) by predicting future behaviour or events. Finally, the argument is presented to peers for scrutiny. This approximation to knowledge works well in a realist ontology where the truth is objectively there and all we need to do is to find it by getting better and better at guessing it.

There are historical reasons why scientific knowledge generation developed in a way that strictly opposed other forms of justification or claims to truth. By tightly defining methods of enquiry and only allowing certain types of justification (i.e. those that are objective, distinct from individuals, replicable, and generalizable) and argument (i.e. rational logic over rhetorical persuasion), science has set the rules of knowledge acquisition and has become a guarantor for truth and a bulwark against religious arbitrariness and arcane claims. However, this power struggle has led to new hegemonies – by fighting off rival views positivism has erected borders around acceptable forms of enquiry, excluding alternative epistemologies and creating a monolithic, self-perpetuating edifice of knowledge generation.

Socioculturalism offers such an alternative epistemology. In this epistemology, the way we communicate is fundamental to knowledge generation: mediated by an environment that is socially, historically and culturally determined, we negotiate a shared understanding that is equivalent to knowledge and serves as agreed but unstable "truth" only until further thinking and interthinking in shared negotiations moves on our understanding (Littleton & Mercer, 2013). Knowledge is thus a process rather than a product, and truth is an unstable fiction, a stop-gap to facilitate communication.

Whichever epistemology we choose will influence our methodology on the one hand and on the other will limit our perspective on the world, what we can see and say by choosing what we deem to be truth and how we can find out about it. It also delineates between what we call data and what we consider an unwelcome interference; similar to the distinction between "signal and noise" or "picture and wallpaper", we choose where we place our attention and where we ignore messy data to strengthen our findings (Herring, 1999).

Being clear, open and explicit about the theoretical stance taken in a research project right from the start is important as it limits the expectations about possible findings and outcomes. In choosing which paradigm to use for our research, we can follow Elliot and colleagues' suggestion: "[u]ltimately, the value of any scientific method must be evaluated in the light of its ability to provide meaningful and useful answers to the questions that motivated the research in the first place" (Elliot et al., 1999, p. 216). However, more than just giving the right answers to the right questions, research also has an

ethical dimension (Ortega, 2012), as is acknowledged by many guidelines on conducting research (see e.g. Creswell, 2009) – where to invest scarce resources, which questions to prioritise, and which answers to listen to are elements of setting up a project. It might well be a necessary part of conducting research to select research questions with ethical considerations (see e.g. Onwuegbuzie & Frels, 2013). For language learning and teaching research, these ethical dimensions include considerations of identity, interculturality, and, as Kubanyiova (2008) points out, the necessarily relational nature of language research. Basing her argument on Allwright (2005), Kubanyiova explains that ethically sound research in language learning and teaching involves interaction and collaboration with the research participants.

In researching online language learning, we thus prioritise questions of how learners can develop agency online, give voice to teachers and learners in online spaces, and counter-balance through our selection of contexts the hegemony of one language over others. Qualitative research can thus help us to establish a full and rich picture of language learning in novel online environments. We need to take into account the multimodal reality not only of the learners but also of their interlocutors, and gather information about the surrounding and support structures, virtual and physical, digital and analogue. We enquire after the subjective experience of online language learners, the meaning and relevance of the L2 (second language) in the existential context of the learners, their assumptions about learning, their history of being taught, etc. To do so we need to go well beyond learning analytics and the binary data (e.g. clicks) afforded by online spaces.

4. GOING BEYOND QUANTITATIVE APPROACHES TO RESEARCH IN ONLINE LANGUAGE LEARNING

For language learning research in general and online learning in particular, a narrow positivist approach has limited value. As we have argued in the sections above, sociocultural approaches open up our perspective to investigating learning as socially situated and knowledge as jointly constructed. Negotiating joint understanding in online learning spaces is influenced by the specific environment and its affordances, and mediated by factors such as technology, second language, and teaching/learning culture. Rather than eliminating research bias, the sociocultural researcher acknowledges her or his presence and influence, and starts from the point of view that researching a particular knowledge construction is shaped by his or her interest. The questions asked by the researcher (the so-called observer bias, see Creswell, 2009) and their presence in the field (the observer influence) are not seen as hindrance in this perspective but as evidence of communication between participants in the field. This means, as stated above, that the theoretical lens applied to the study by the researcher needs to be acknowledged and reflected.

The digital nature of CALL provides the researcher with an enormous amount and fine granularity of data. It is a rich field for study as the circumstances are permanently in flux due to changing environments and technological advances (Stickler, 2017). The major concern for empiricist CALL research is gathering enough reliable and controlled data to investigate learning. Meaning making online as such is not the focus; it is not part of the process that the researcher undertakes to create knowledge. However, data alone does not create knowledge, and empiricist CALL has yet to take up the challenge of contextualising communication and interaction in language learning and teaching and acknowledging fully that the online environment plays a mediating role for the agent, that is, the learner or teacher.

We would like to provide one example from our own research using eyetracking to describe in more detail what moving from quantitative to qualitative methodologies actually means. Following eyetracking studies, the authors decided to investigate the teachers' perspective in online language tutorials. Three teachers' tutorials were recorded using eyetracking. The details of the teachers' eye movements were played back to them in a gazeplot video which acted as stimulus for an in-depth interview. Whereas the original method of eyetracking fits with a positivist paradigm and realist

ontology, the new mix of methods emphasise the agency of the research participants and fit with a sociocultural paradigm. By using data to highlight a learner's or teacher's attention focus through eyetracking, the researcher can assume a quasi-objective stance. However, by regarding the gazeplot videos that show participants' gaze movements across the screen as a mere stimulus for a reflective interview, the researchers engage in a dialogue with participants, negotiating meaning of observed behaviours, attempting through empathy to understand the experience of online language learning and teaching, and – crucially – to accompany the participants on their own journey of reflection and re-focussing on their online engagement (Shi, Stickler, & Lloyd, 2017).

5. A SOCIOCULTURAL APPROACH TO LANGUAGE LEARNING AND TEACHING

As the example above shows, research examining online environments as language learning spaces can benefit from context awareness and sensitivity to influencing factors (e.g. regarding the affordances of the physical environment, see Gibson, 1979), and understanding the constant change in tools and communication (e.g. re choice of mode). By providing a more appropriate approach to understanding language learning and teaching in online environments (see Lamy & Hampel, 2007), sociocultural theory can help researchers investigate a range of phenomena in relation to language learning and teaching, from understanding how learners use the L2 alongside other resources as tools for mediation and thus for learning, to how the teacher can employ the zone of proximal development to stimulate development (see Lantolf & Thorne, 2007). With its strong focus on the concept of mediation, sociocultural theory is particularly useful when exploring learning in online environments. It takes account of the tools used and their context, and posits that learning does not take place in a vacuum but is always situated (Daniels, 2007; Lave, 1991; Vygotsky, 1978; Wertsch, 1991), and it allows for the shifting effects of yet-to-be-established conventions for online communication which is in permanent flux. It is thus also an ecological perspective (van Lier 1998), which understands learning as a "nonlinear, relational human activity, co-constructed between humans and their environment, contingent upon their position in space and history, and a site of struggle for the control of social power and cultural memory" (Kramsch, 2002, p. 5).

The Douglas Fir Group (2016) – a group of eminent applied linguists who authored a programmatic article entitled "A Transdisciplinary Framework for SLA [Second Language Acquisition] in a Multilingual World" – acknowledge the messiness of language (and language learning by extension) when they describe it in the following way:

language inextricably involves cognition, emotions, consciousness, experience, embodiment, brain, self, human interaction, society, culture, mediation, instruction, and history in rich, complex, and dynamic ways. In addition, we have proposed that a new, rethought SLA begins with the social-local worlds of L2 learners and then poses the full range of relevant questions, from the neurobiological and cognitive micro levels to the macro levels of the sociocultural, educational, ideological, and socioemotional (p. 39).

In their article, the group provide a useful framework of language learning and teaching that attempts to do justice to its multifaceted nature. This framework brings together social activity on the micro level, which is situated within and shaped by sociocultural institutions and communities on the meso level, which in turn are situated within and shaped by ideological structures on the macro level. The group then extricates the following 10 fundamental themes from this framework (The Douglas Fir Group, 2016, pp. 26-36):

1. Language competencies are complex, dynamic, and holistic
2. Language learning is semiotic learning

3. Language learning is situated and attentionally and socially gated
4. Language learning is multimodal, embodied, and mediated
5. Variability and change are at the heart of language learning
6. Literacy and instruction mediate language learning
7. Language learning is identity work
8. Agency and transformative power are means and goals for language learning
9. Ideologies permeate all levels
10. Emotion and affect matter at all levels

The group's work and their notion of the social-local worlds of L2 learners are informed by sociocultural theory, in particular by the work of Vygotsky (1978) and Wertsch (1991) – with the latter describing human mental functioning as 'inherently situated in social, interactional, institutional and historical context' (Wertsch, 1991, p. 86).

As Lantolf, Thorne and Poehner (2015) point out, "SCT [Socio-Cultural Theory] argues that human mental functioning is fundamentally a mediated process that is organized by cultural artifacts, activities and concepts" (p. 207). The Douglas Fir Group (2016) acknowledge the crucial role of mediation in L2 learning which "cannot be ignored in any attempts at understanding language learning, regardless of theoretical predilections." (p. 29). Learning – and thinking in general – needs symbolic tools such as language (Vygotsky, 1978) – or what Wertsch (1991) calls 'technical tools', which would include computers. Wertsch (2002) draws attention to the fact that any new cultural tool "introduces fundamental change, sometimes to such a degree that we can question whether the same form of action is involved at all" (p. 106).

6. LANGUAGE LEARNING IN ONLINE ENVIRONMENTS

In the worlds that L2 learners inhabit today as described by The Douglas Fir Group, the new digital media play a crucial role. Learning and teaching no longer takes place solely in physical classrooms but in a variety of online and blended settings. Hampel (2014, p. 94) points to "the additional level of mediation that is introduced in digital environments, through tools such as mouse, keyboard, webcam, applications, icons, and emoticons. Thus, the body is being extended to include computer and software, and typing and using a mouse become all-important." The mediating effect of online communication technologies means that the ways in which learners and teachers make meaning and create interthinking spaces is different compared to face-to-face environments.

Many teachers as well as researchers continue to judge online learning on the basis of the affordances of face-to-face environments, rather than exploring the additional affordances that the new digital media offer and using them to best effect. Thus, online learning is seen by many as a limited and limiting endeavour, with computer-mediated communication lacking the depth of face-to-face interaction, offering reduced modalities and not allowing for certain non-verbal and paralinguistic features; it is seen as not immediate, creating cognitive as well as affective challenges. This is in contrast with a growing recognition that many online environments give language learners and teachers access to tools that afford multimodal communication (Kress & Van Leeuwen, 2001) and transcend time and space, providing the learner with a mix of communication modes (see Hampel, 2014, for an overview of a number of online tools and what they can and cannot do when used in a formal learning setting).

While physical classrooms have been established over centuries, resulting in very particular social practices both in terms of teaching and learning and in terms of the researching of teaching and learning, online environments are still relatively new and practices are developing as we write this. Online learning can be synchronous and/or asynchronous, it can be limited to one mode or it can happen in multiplicity of modes, with mobile tools and/or static devices, and it can form an integral part of structured courses supported by a teacher or be used by learners in an informal and

self-directed way. Learners today have access to a vast array of virtual sites with different degrees of multimodality that can be used for language learning. Technology has developed from relatively simple tools for written communication (such as instant messaging) to complex systems such as web-based platforms that provide resources, activities, interactive tools etc. and are used in educational settings (virtual learning environments (VLEs), or learning management systems (LMSs)) or messaging services such as WhatsApp, which offer a multiplicity of features to smartphone users (voice calls, one-to-one video calls; sending of texts, images, videos, documents, audio files, etc.).

Whereas meeting the different requirements for teaching and learning languages online in a practical way has been gathering momentum over the past decade, the same cannot yet be said for research into these contexts. To support our argument that online language learning research needs different methods and tools to capture its essence, we would first like to illustrate the significant difference that the materiality of the online medium makes by focusing on three areas.

Firstly, the physical presence crucial for creating inter-thinking opportunities cannot be taken for granted in an online space which is physically dispersed and temporally non-concurrent. Whereas face-to-face teachers rely on the shared space and multi-sensory input to create common understanding and facilitate interthinking (e.g. through gestures, smiles and other para- or extra-linguistic features such as gaze), online spaces lack many facets of the sensory alignment. This makes establishing intersubjectivity (the linking of subjective impressions in a group which helps creating common understanding) more challenging. For example, learners in online spaces cannot rely on almost-instantaneous feedback through nods and smiles from the teacher. Even if the online teacher provides such feedback consciously, the learner needs additional information to be certain that the gesture had been intended for her or him. The lack of a common shared space also means that deixis can be confusing or misleading. Considering that language teachers in particular routinely employ gesture, deixis, non-verbal feedback and encouragement, it seems obvious that research has to pay scrupulous attention to such details and differences.

Satar (2015), for example, shows the importance of eye contact in synchronous online multimodal communication for facilitating the establishment of social presence. Eye contact is not always easy to achieve in videoconferencing environments because of the location of the camera (Kern, 2014; Satar, 2010). Establishing direct eye contact with the interlocutor would mean looking at the camera - which can be perceived as staring - and at the same time potentially missing cues on screen. Satar illustrated in her study how language learners used different non-verbal means (smiles, deixis, body orientation and synchrony) to create social presence. A study by Lee, Hampel, and Kukulska-Hulme (2019) illustrates how learners use the affordances of mobile technologies in informal learning settings to help develop intersubjectivity with their interlocutor by employing the in-built camera as a pointing device. And Shi, Stickler, and Lloyd (2017) point to the importance of artefacts to allow learners who communicate online to build relationships and create connections on an affective level – artefacts which in their study of primary learners in a telecollaborative setting included a teddy bear.

Secondly, particular environments make available particular modes of communication. Kress (2000, p. 199) explains the impact of materiality on mode as follows:

The deep logics of each mode are related to, or derived from, the materiality of the semiotic mode – sound, and temporality and sequence; visual images and simultaneity and spatiality; gesture, and temporality, sequence, and (three-dimensional) spatiality; and so on. The syntax of speech […] derives from a logic of sequence, and of its potentials.

When using instant messaging tools, Facebook or other social media today, written language and images (ranging from emoticons, pictures and photos to videos) are the dominant modes of communication (Androutsopoulos, 2007). Other online environments are more multimodal, either combining writing and speech, or, like videoconferencing, also including non-verbal communication modes. However, even though multimodal environments such as Skype may resemble face-to-face

environments, the different materiality of the medium has an impact and users have to be aware of the affordances of the particular environment (e.g. in terms of the communication modes that are available or the mechanisms it offers to support learner interaction) as well as the device that they are using (e.g. in terms of the use of the camera, the size of the screen, the portability of the device).

Also, affordances and conventions that learners are familiar with from face-to-face settings do not necessarily work in online classes – audio channels might have a delay, students' attention might be focused on a different area of the screen, and reading text chat entries might take time. Hence, experienced online language teachers have to employ a complex mix of emoticons, text chat and spoken responses to convey a timely and comprehensive feedback (see Shi and Stickler, 2018). Learners and teachers have to develop new literacy practices that allow them to use the new digital tools effectively (see e.g. Chun, Kern & Smith, 2016; Elola & Oskoz, 2017) as well as critically (see e.g. Cope & Kalantzis, 2009).

Thirdly, the new digital media offer multiple opportunities for today's language learners to encounter the language they are learning and to interact with speakers of that language. These opportunities can be found in the context of structured courses (e.g. in the form of a telecollaborative tandem experience with teacher support, see O'Dowd & Lewis (2016) for an overview of research in this area), in a semi-structured manner offered by sharing platforms such as Livemocha (Lin, Warschauer, & Blake, 2016), or in a number of ways in which learners can engage with L2 speakers in an informal and self-directed way without any input of a teacher or mediator.

Language learners today have increasing opportunities for informal learning outside of structured educational settings. Social media sites such as Facebook and Twitter (Lamy & Zourou, 2013), online gaming platforms such as World of Warcraft (Thorne, Black, & Sykes, 2009; Bytheway, 2015), virtual worlds, or other internet interest communities, for example around fanfiction (Sauro, 2017) allow for encounters 'in the wild' (Wagner, 2015). The new digital media provide various avenues into settings where language is used as a means to an end rather than just an end in itself. It allows learners to go beyond the pre-determined classroom space into a world where they can immerse themselves and where language is experienced as more than a set of abstract concepts and rules. Thus, mobile technologies enable learners to be more in control of their own learning (see e.g. Kukulska-Hulme, 2016; Lee, Hampel, & Kukulska-Hulme, 2019). And Pellerin (2014) shows that even young learners can create their own language learning experiences through interacting with mobile devices.

7. RESEARCHING ONLINE LANGUAGE LEARNING AND TEACHING

As we have tried to show in the previous sections, the effect of digital environments on learning cannot be overestimated; it raises questions around the cultural, institutional and historical embeddedness of the tools used and how this impacts on the learning process. This poses a fresh challenge to our understanding of what language learning means and what it entails, therefore meriting discarding old expectations and trying out new methods to research online language learning and teaching. Knowing in detail what learners are doing in a computer-mediated environment and how their physical as well as virtual surroundings impact on their learning experience necessitates different methods of observation and recording. This section will give some examples of successful changes in perspective, while at the same time providing theoretical context.

Technological mediation impacts on researchers' practices (Chun, Kern & Smith, 2016). Research is thus shaped by the perspective that is taken (e.g. recipient vs. sender), the technology that is used, and the environment that is considered. It is also influenced by the researchers choosing particular data sources and ignoring others. Thus, by shifting the focus to what learners actually do and experience while they are engaged in online learning, Fischer (2007) opens up new avenues by combining digital opportunities for data recording with an emic perspective. Smith (2008) directs our attention to the data missing from all too readily available online logs of language learners' chat conversations, for example self-correction moves. Suzuki (2013) extends the research perspective by adding a video

camera that follows the learner's use of additional resources outside the digital environment. Shi, Stickler and Lloyd (2017) combine the perspective of quantitative eyetracking data with participants' reflections stimulated by observing one's own gaze focus in synchronous online language learning events (see Messmer, 2015).

In terms of the data available today, on the one hand the researcher is faced with a wealth of digital information that can be collected in the context of online language learning and teaching – even without employing external data collection tools. In a VLE or LMS information is automatically recorded and can include every click the learners make, every correction they carry out in a wiki, the timing of every contribution by the teacher, etc. It can be multimodal, comprising written text, speech, and images.

On the other hand, language learning (especially in the context of interaction for language learning purposes) has become less confined to the four walls of the classroom and moved into the 'real' world, ranging from organized telecollaboration activities with learners in different countries to learners using mobile devices to explore the physical world around them. For the researcher this means that it is more difficult to access information about the physical environment in which the learner is located, and about the affordances of the environment and the tool(s) used (Lamy & Hampel, 2007). The learner may be in an institutional space (e.g. classroom or computer lab at school/university), s/he may be at home or in a public place. It may be quiet or noisy, s/he may be in- or outside, with other people or alone. Unless the researcher is physically present with the learner (or the learner is video recorded, see Suzuki, 2013), other information is less readily available, including the hardware that is being used (which may be a desktop computer, a laptop, a tablet, or a mobile phone) as well as software. All of these have a potential impact on the learning. Some VLEs afford teachers more privileges than learners and thus a different interface; the researcher therefore needs to decide whether to follow the learner's or the teacher's perspective. The researcher also has no insight into what additional tools the participants may be using (e.g. Google Translate). In some contexts, such as in online tandem exchanges, the use of additional tools such as dictionaries or character recognition software can interrupt the flow of the conversation and even influence the dynamics between learners (see Stickler & Kan, 2012; Kan, Stickler, & Xu, 2013).

Informal online language learning contexts outside the physical classroom pose even more new challenges to researchers, as up to now most education research routines were developed for online environments that were created more specifically for learning purposes (e.g. VLEs/LMSs such as Moodle or Blackboard). These challenges include physical access to the data as well as ethical issues around privacy.

Additional challenges arise around the research focus and accompanying analytic tools. In traditional face-to-face language learning, interaction tends to take place through spoken language in a physical classroom. This has impacted on how research into interaction has developed, with a focus on spoken interaction and particular discourse functions (see e.g. Sinclair & Coulthard, 1975; Seedhouse, 1996) and the use of for example conversation and discourse analysis (Lamy & Flewitt, 2011; O'Rourke, 2008; Smith, 2003). However, how do concepts that relate to spoken classroom structures such as the IRF (Initiation–Response–Feedback) model or negotiation of meaning translate to online interaction, which often takes place in the written mode or in mixed modes? What about the interplay between verbal and non-verbal language examined for example in conversation analysis – an interplay whose form very much depends on the setting in which it takes place? The difficulties of multimodal transcription and data analysis can exemplify the complexity of researching online communication: where turns are delineated and how the combination of different overlapping modes is presented and analysed is far from resolved and poses challenges to online researchers trying to adapt established methods (Berglund, 2009; Flewitt, Lancaster, Hampel & Hauck, 2014).

8. CONCLUSION

To summarise, researching online language learning benefits from new and innovative approaches, not just from enhanced technological opportunities. It requires a conscious effort and re-direction of research energies to deal with the material differences that make online language learning unique (Hampel, 2003; Kern, 2014; Satar, 2015).

Online communication is still a relatively new format for meaning-making and its underlying processes are thus challenging to research. Nevertheless, using a theoretical stance where we take communication as crucial for creating inter-thinking spaces ("to make communication work"), the differences between face-to-face and online communication have to become a focal point for investigations. Qualitative methods within a sociocultural framework are a promising start for observing, describing, and understanding online learning and teaching, seeing it as a process, as constant adaptation which is grounded in time, space and the body, which involves sensory input, emotional involvement, biological aspects, as well as changing and changeable socio-historical interpretations.

To give just one example, an investigation of synchronicity in an online classroom will need to start with questioning very basic assumptions of SLA research. When a face-to-face teacher reacts to students' utterances, the delay is negligible, and the teacher can check almost immediately whether the learners have understood. However, sensory input varies when moving from face-to-face to online communication thus requiring new ways of sharing or acknowledging. Research of online tutorials shows how frequent miscommunication and technical delays occur, often without the teacher being aware of the problem (Shi & Stickler, 2018). The negotiation of meaning between interlocutors is influenced by the affordances of the medium, mediated by technology, by language and cultural factors such as theories of learning, and also by implicit pedagogies. The researcher in online language learning spaces will need to keep an open mind when observing the process to take into account shifts and ambivalences, such as the lack of body synchrony and the change of non-verbal clues from auditory to visual.

Finally, scrupulous investigation of online language teaching does not only advance our knowledge and benefit online teachers and learners, it can also strengthen our practice of face-to-face teaching. By shifting our perspective we can re-focus the attention of face-to-face classroom researchers to often neglected aspects such as the basis for establishing shared understanding, the need for explicit projection of social presence, and the careful consideration of contextual factors.

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