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Qualitative and mixed methodology for online language teaching research

Abstract

This paper provides an overview of CALL (Computer Assisted Language Learning), its history and current developments. It presents a rationale for moving CALL research forward, and outlines a particular approach to researching online language teaching and learning: the use of qualitative methodology. It is in this historical context that a case for more qualitative and integrative research designs is made.

Examples of qualitative and mixed method studies are taken from the context of language teaching at the Open University in the United Kingdom, the largest institution of its kind in Europe, with a remit of teaching all subjects at university level to adults, regardless of their prior qualifications. With the help of these examples the scope and promise of qualitative approaches are discussed.

1 Introduction

From its origins, applied linguistics as a field has had strong links to language teaching and language learning research (Mcnamara 2015). Where language teaching was supported with technology – and originally this might only have been a tape recorder or a telephone –, innovative methods could be developed and consequently researched. Technology also played an increasingly important role in recording and analysing data for applied linguistics research. Since the 1980s a field of Technology Enhanced Language Learning (TELL) has gained prominence: Computer Assisted Language Learning or CALL; first as a tool in language teaching or independent language learning but increasingly also as a research field in its own right. As technology progresses and is becoming increasingly integrated into day-to-day life, CALL has diversified and now includes areas such as MALL (Mobile Assisted Language Learning) and OEP (Open Educational Practices).

This paper will look at what makes CALL and related areas special in applied linguistics research, including reasons why it is worth taking a closer look at some of the recent trends in CALL research, particularly a move towards mixed methods and qualitative research.

The next section will present a short definition and history of CALL and its research, and the current trends in CALL. This will be followed by an overview and some specific examples of qualitative and mixed method CALL studies. The remainder of the chapter will deal with the benefits of engaging in CALL as a field of research and an outlook on future developments.

2 CALL: Definition and research

2.1 Teaching with computers – a historic overview

Computer Assisted Language Learning (CALL) has taken different forms over the past decades. Although some people still think of CALL as predominantly drills on a desktop computer with automated feedback provided by the machine, information technology has added much more sophistication to the technological enhancement of education. Fischer (2013) outlines the three phases of CALL from the 80s to the 2000s as focusing on technology (80s), information (early 90s) and communication (2000s), respectively. Warschauer and Healey (1998) link the development of CALL to different learning theories; they identify its phases matching behaviouristic, communicative, and socio-cognitive pedagogies. Specifically looking at the place of computers in language learning classes, Bax (2003) talks about the restricted, open, and integrative use; where “restricted” describes tightly circumscribed activities with a set range of possible moves and pre-defined outcomes (this could best be matched with a behaviouristic pedagogy); where “open” means a relaxation of the boundaries of the classroom to allow real-life communication with the outside world as part of the learning experience (fitting communicative pedagogy); and “integrative” refers to a new, in 2003 as yet predicted form of ICT (Information and Communication Technology) use in language classrooms that makes computers – or their equivalent – virtually invisible or translucent, as they are so much part of the everyday life, way of communicating, gathering and sharing information that their use becomes as “normalised” as the use of pen and paper in the 20th century.

In 2015, this predicted “normalisation” (Bax 2003) has already taken place: as tools for language learning computers have become almost ubiquitous and thus “invisible”; learners choose from a variety of different devices and applications for their personal use as well as for supplementing in-class learning (Levy 2009). Personal Learning Environments (PLEs) can accommodate different learning styles and skills levels and adapt to a user’s preferred mode, speed, and frequency of learning (Attwell 2007; Sclater 2008). Crowdsourcing has become

popular for translation and even for teaching, and mobile learning has developed far beyond the simple vocabulary training apps on phones (Godwin-Jones 2011; Kukulska-Hulme 2013). Furthermore, computers are used for communication; CMC (Computer Mediated Communication) is one form of information technology to support language learning in more naturalistic settings, moving from a “drill and kill” approach of language pedagogy to a communicative or task-based paradigm.

2.2 CALL research: Where is it published?

When Zhao (2003) compiled an overview of CALL related articles and where they tended to be published, his findings identified three main journals in this field: 67% of CALL articles were published in either the CALICO journal, LLT or in System. CALICO (the Computer Assisted Language Instruction Consortium) is a North-American association devoted to the support and research of CALL, similar to its European equivalent, EuroCALL. LLT or Language Learning and Technology, is an independent journal, originally published out of the University of Hawaii’s Manoa campus with its long history of researching technology in the support of teaching. And finally, System, An International Journal of Educational Technology and Applied Linguistics, with its dual focus still garners 10% of all CALL related articles published between 1997 and 2001. The remainder of CALL articles were published in journals associated with computing or applied linguistics, for example, Foreign Language Annals, TESOL Quarterly, or the Journal of Educational Computing Research.

In 2015, the field has changed considerably. Not only have some of the journals changed their status from being independent to being commercially published and new journals have entered the arena, the status of CALL as a niche subject has also shifted. Similar to the computer in the classroom, research with a strong focus on technology has become “normalised” (see Bax 2003) and is being published in mainstream applied linguistics journals.

Replication of Zhao’s search, originally conducted in 2003, for articles published between 2006 and early 2015 shows the following picture: overall, 904 articles fitting the same criteria Zhao used in his study could be found for almost 10 years covering 2006 to early 2015. Four CALL specialist journals (CALL, CALICO, ReCALL and LLT) still publish the majority (58%) of these articles. An overview of all major publication outlets and their relative share of CALL publications is presented in figure 1.

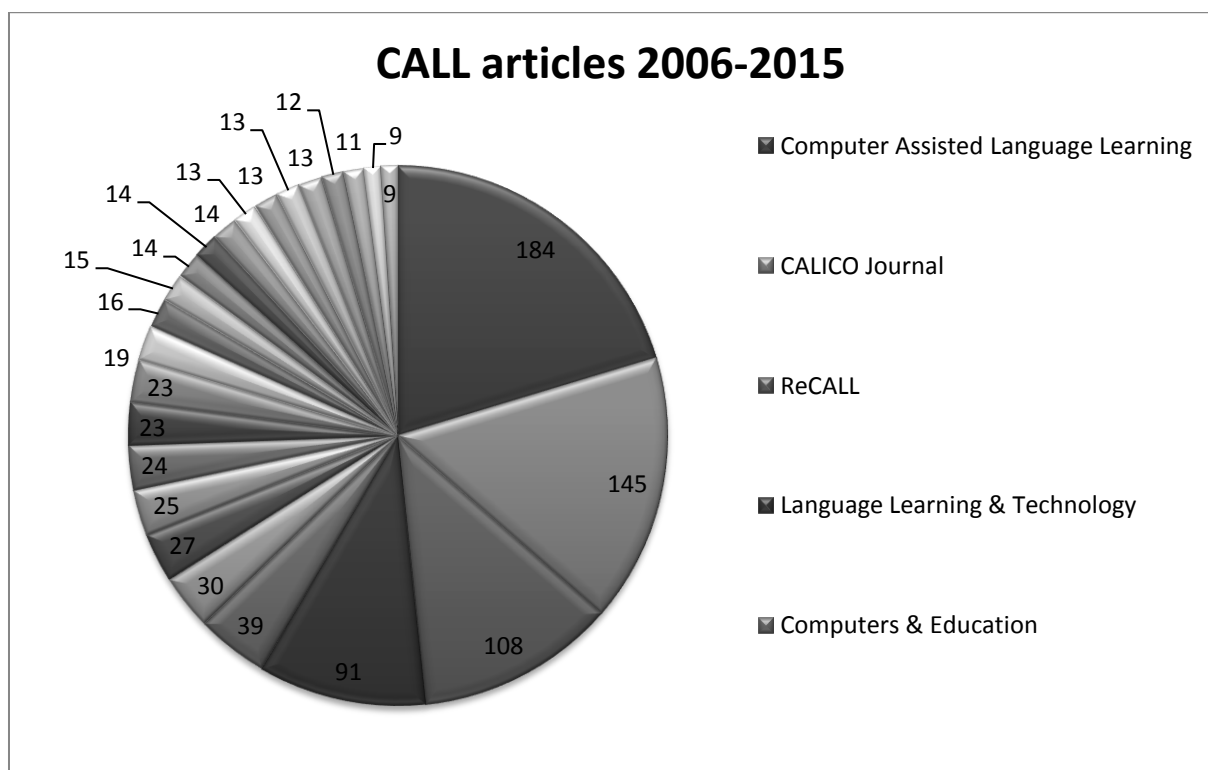


Figure 1: CALL articles published from 2006 to early 2015

Of these four journals, two did not play a major role in the period covered by Zhao's (2003) study: CALL (the Computer Assisted Language Learning journal published by Taylor and Francis) has steadily gained influence and is by now the major outlet for CALL related studies. And ReCALL, the journal of the EuroCALL association, is slowly catching up with its North-American counterpart.

Comparatively, more CALL articles are now published in applied linguistics journals such as the Modern Language Journal and Language Testing, for example, while computing and educational technology journals remain an interesting venue for researchers wishing to share their findings in the area of CALL (see figure 2).

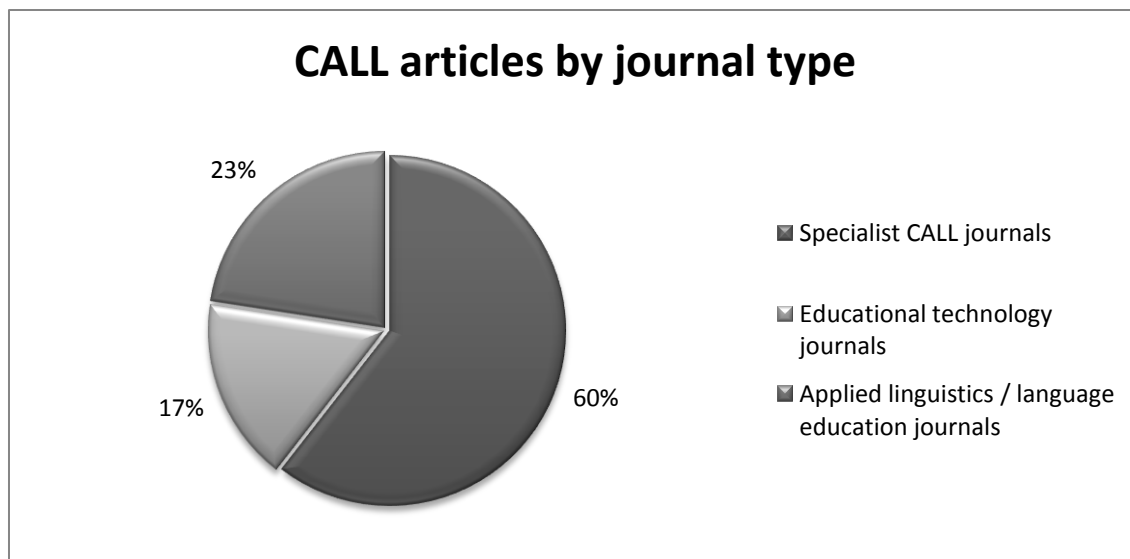


Figure 2: CALL articles published by journal type

2.3 Developments in CALL research

Along with the pedagogy of CALL, researching CALL has been transformed over the past decades. Where classical drill-type activities on the computer were evaluated with a pre-test-post-test experimental approach to prove the effectiveness of CALL, more naturalistic approaches are needed to investigate the new forms of computer supported language learning. At the beginning of the 2000s, Kern, Ware and Warschauer (2004) as well as Jung (2004) looked at CALL publications for their location in different research paradigms, and discovered a trend away from positivist studies and a socio-cognitive orientation of research as well as pedagogies. This, roughly, follows the “social turn” also prevalent in applied linguistics in general at the time (Block 2003). For the generic field of language teaching and learning, Benson and colleagues (Benson, Chik, Gao, Huang and Wang 2009) found that the number of qualitative studies was relatively stable between the years 1997 and 2006, with a number of special issues of major journals in the field presenting studies in the qualitative domain. Earlier in 2015, Stickler and Hampel (2015) re-confirmed this trend for the field of CALL with a Special Issue of the CALICO journal devoted to qualitative and mixed method research.

This move towards more qualitative or mixed method approaches to CALL research is discussed in the next section.

3 Qualitative research in CALL

Denzin (2009), discussing current trends in educational research, makes the point that selecting a particular method or approach already predetermines what exactly can be found and what knowledge can be generated. The same is true in a subject area like CALL that is fundamentally suspended between different fields of research with their underlying paradigms. As Stickler and Hampel (2015) have shown, CALL research is influenced by science, social science, education, linguistics and applied linguistics. Taking this tension not as a challenge but as a resource, CALL researchers can choose from a rich variety of methods. It is, however, essential that this choice is made in full awareness of the epistemological implications and that any study describes not only the set-up, data, and evidence collected but also the perspective taken.

The special issue of the CALICO journal edited by Stickler and Hampel in 2015 brought together a number of CALL studies that deliberately chose a qualitative or mixed method approach and gave extensive justification for this choice. For example, Bytheway (2015) uses a mix of methods to investigate the incidental vocabulary learning of online gamers. Her choice of naturalistic setting and a mix of observation and questioning her participants brought to the fore what a purely quantitative study would have missed: the process of incidental learning is by no means without purpose; on the contrary, she discovered learning strategies typical for the online gaming environment.

Satar (2015) in her detailed investigation of social presence in online language learning exchanges found that learners are often well aware of the necessity to project social presence in online communication to sustain the dialogue and enable a positive learning experience.

Many such examples could be selected where a careful and detailed study in a natural or naturalistic setting can produce results that have the potential to move forward the field and change our knowledge about online language learning and teaching. The limited space available for this chapter allows for only a brief outlook on some promising methods, a few selected examples that highlight the benefits of a change in perspective through adding qualitative data, and finally – in section 4 – a short attempt at justifying the necessity for deliberate and well-planned mixed method and qualitative studies.

3.1 *Promising methods*

As CALL research can draw from different research traditions (see Stickler and Hampel 2015), a variety of new and promising methods has been used or is currently being trialled. CALL researchers can select from various methods and combine them in novel ways that can enhance their findings and strengthen their claims. As was shown above, CALL researchers can also “speak” to different discourses, by publishing in different journals and adapting their ways of expression.

From the field of social sciences in general, and educational research more specifically, CALL researchers have adopted a variety of ethnographic methods, for example online or virtual ethnography (Hine 2000), online discourse analysis (Androutsopoulos 2006; 2008), and netnography (Kulavuz-Onal 2015). Psychology and philosophy contribute a range of phenomenological methods (Pietkiewicz and Smith 2014). Ideas and methods from computing research, particularly HCI (Human-Computer-Interaction) research can generate new models of mixing qualitative with quantitative approaches (Kitade 2015; Stickler and Shi 2015b; Stickler Smith and Shi in press).

To exemplify the difference adding qualitative methods to the research design can make, the following section will present three examples from my own and my colleagues’ research at the Open University, UK.

3.2 Examples of CALL research

Computer aided teaching offers a plethora of data, already recorded and ready for analysis; for example, usage data of websites, written transcripts of chat sessions and forum contributions, time stamps and clicks in online interactions. There is great temptation to investigate user behaviour based on this readily available information and thus many studies in CALL research rely on this type of quantitative, “shallow” data. However, that an uncritical reliance on the readily provided data – however detailed it may be – can be misleading has been shown by researchers such as Smith (2008) who looked at chat interactions from a learners’ perspective, taking into account the multiple false starts, repairs, hesitations, in other words the “missing information” for his analysis of online interactions.

The opaqueness of the automatically collected quantitative usage data can easily be shown in two examples from the Open University courses. In the first instance, the usage of web resources at a beginners’ German course was automatically traced by collecting data on the

number of visits by individual students and the subpages and tools they used. This data is shown in figure 3 below, showing a longitudinal overview of all students' (N=520) activities over the 40-week course.

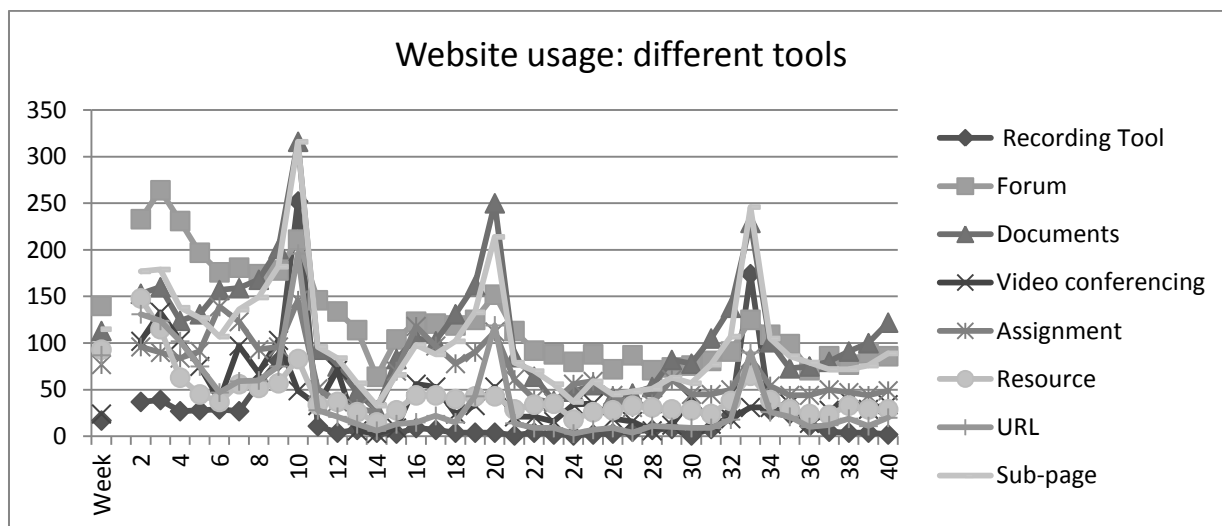


Figure 3: Website usage: different tools

The detailed information available lends itself to sophisticated statistical analysis and prediction of future student behaviour. However, without the necessary background knowledge, the information might be more misleading than helpful. As a simple example, the dates of examinations and due dates for assignments were added to the graph in figure 4, below, showing a different version of the same information.

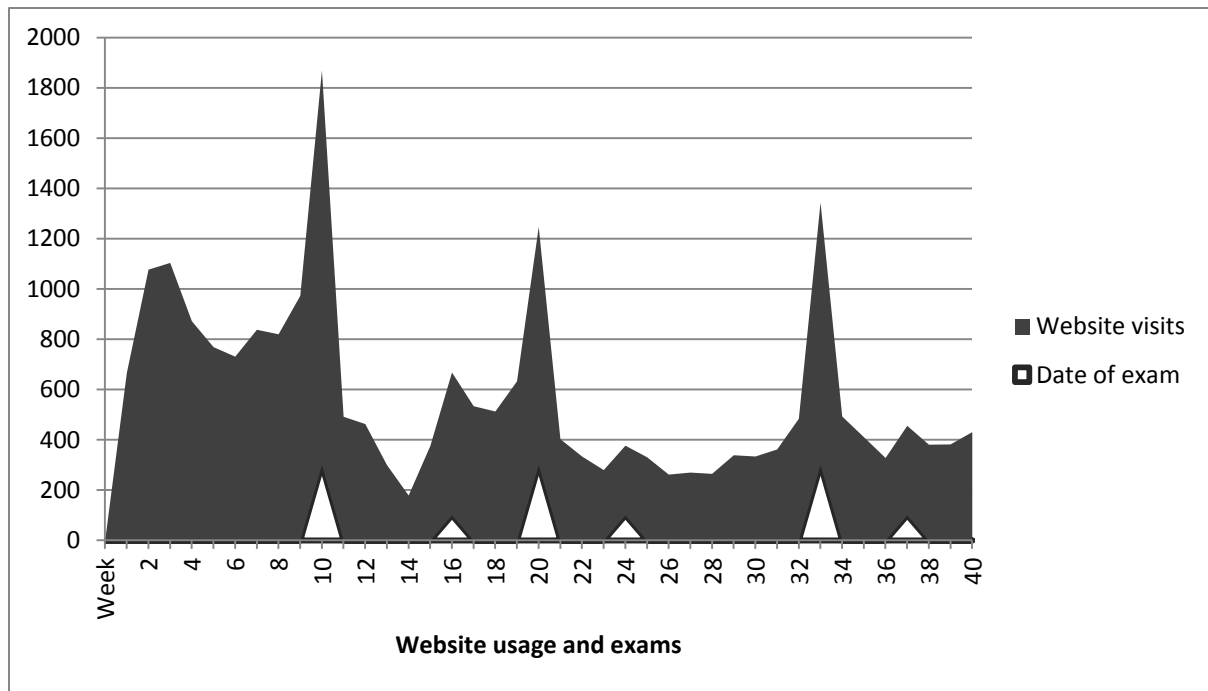


Figure 4: Website usage and exams

This illustrates how the peaks and troughs visible in figure 3 can be explained by students' need to engage with examination material at a given time and their motivation to prepare before the due date of their assignments.

In a similar course at the Open University, Margaret Southgate (2015) investigated the activities on a Tutor Group Forum (TGF), specifically how forum strands were initiated by tutors and by their students. A tutor group forum is a small discussion forum, managed by the tutor or teacher of a group of up to 23 students. The discussions are private to this group. Overall, the course investigated here had 19 different tutors working at the time, each responsible for one or two tutor groups.

Table 1: Activities on a tutor group forum

TGF Activity	Average (mean)
Tutor-initiated discussions	19.45
Student-initiated discussions	4.82
Tutor replies	19.23
Student replies	27.77

Averaging the figures shows that the majority of forum entries were initiated by tutors, and that an "average tutor" would start almost 20 discussion strands. However, what this table

hides is that there was no such ideal or average distribution of activities on this course, in fact, tutors behaved very differently. The most active tutor initiated 124 discussions in her forum; in addition, the forum also contained 47 student initiated discussions. Overall, there were 417 entries in this forum, comprising initiations of new topics or discussion strands and responses to these topics. The least active forum, led by a different tutor, consisted of only one entry by the tutor without any reaction or responses from students. Closer investigation showed that the tutor had chosen a different medium to communicate with her students and had abandoned the forum early on (Southgate 2015), a teaching practice that might be as communicative and encouraging as the frequent use of the tutor group forum for messages and discussions.

These two examples demonstrate how a simplistic numerical approach can hide rather than reveal information relevant for understanding student learning in online environments. Average forum activity figures only present an equalised picture of access to this source of information and potential encouragement to contribute. More detailed investigation of the figures already hints at quite diverse practices between different tutors and different groups. However, we still do not know why some students write in the forum and others do not, we lack information about the alternative opportunities to communicate offered by some tutors. Only the initiative of the investigator to directly approach the tutor whose numbers were surprisingly low, brought this to light. It took a “qualitative leap”, the courage to change methodological direction in the investigation to reveal how a simple change of medium can disguise communicative exchanges and create the wrong impression of a “silent group”.

3.2.1 The multimodality of online communication

One of the benefits of online data collection is the richness of modes. This can enhance quantitative studies but is of particular relevance to qualitative perspectives. For example, similar to face-to-face conversations, online interactions can use a multitude of different modes: speaking (audio), visuals (e.g. video or images), text (e.g. textchat or document sharing) and emoticons. Recordings of online discourse can contain details of all these different modes and can be investigated using a multimodal framework (Flewitt, Hampel, Hauck and Lancaster 2014; Hampel and Stickler 2012). A multimodal perspective can help to show how online communication is rich in detail and not just limited to one or two modes. By combining transcriptions of spoken interaction, for example, on an audio or video conference, with the written textchat accompanying the dialogue, plus adding non-verbal cues such as the

use of emoticons and images, the richness of online communication becomes available for analysis, avoiding a reductionist view. New perspectives on online communication are also beginning to investigate the uniqueness of online communication in teaching and learning situations, where skilful use and combination of modes can enhance the learning experience for students.

Stickler and Shi (2013) transcribed online Chinese tutorials using a multimodal framework to investigate the interaction between learners and the teacher in an online video conferencing environment. Figure 5 shows a short excerpt from the transcription. Included are the time stamp (taken from the recording), technical information on participants joining and leaving the online tutorial space, and interactions in spoken (“audio”), written (“textchat”), and symbolic (“emoticons”) form. In addition, the software provides a whiteboard for the display of visual teaching materials. For the purpose of this study, the audio was separated into English and Chinese turns and Chinese is transcribed in Pinyin and characters. Pauses are also represented and timed.

time	task	technical issues	new turn	pause length	speaker	audio English	audio PinYin	audio Chinese	whiteboard	text chat	ticks	emoticons	lesson plan
(00:00 to 02:42)				pause length					Whiteboard: Title page		S1A: yes tick / S3M: yes tick		
00:00			NT		T1L:	<breathing noise>			T1L				Warm-up and introduction - 2 mins
00:06		T1L mic off											
00:08			NT		S1A:	uh	jin1 tian1 shi4	今天					
00:09					S1A:	uh							
00:12		S4U joins			S1A:	uh	liu4 yue4	六月					
00:13					S1A:	uh <subvoc> sorry							
00:15					S1A:		qi1 yue4 liu4 hao4 .	七月六号.					
00:16					2S1A:	<pause>							
00:17					1S1A:	<pause>							
00:19										S4U			
00:20		S1A mic off			1					S4U			
00:21					1					S4U		T1L: smile	
00:22					1					S4U: dui bu qi			
00:23			NT		T1L:		hen3 hao3 . jin1 tian1 shi4 qi1 yue4 liu4 hao4 .	很好. 今天是七月六号.					
00:28					T1L:	S2C							
00:29					T1L:		jin1 tian1 xing1 qi1 ji3 ?	今天星期几?					
00:32		T1L mic off			3								
00:35					3					T1L			
00:38					3					T1L: hello, S4U			

Figure 5: Multimodal transcription data

During the data analysis process, information about the lesson plan, i.e. the teacher’s intentions, was added and the multimodal data itself then served as a stimulus for reflection to the teacher (Stickler and Shi 2013). In the second cycle of data analysis, a column for learner reflections collected during a stimulated recall interview was added. The third cycle of

analysis contributed a research assistant's comments on discrepancies between the teacher's intentions and the learner's perceptions, thus identifying critical incidents in the data. The final cycle of analysis completed the complex transcription format with the researchers' reflection notes.

In transcribing different categories researchers already make decisions about the data (Hammersley 2010), more so if categories such as "task" or "lesson plan" are added that imply intention on the part of the teacher. The results of our project (Stickler and Shi 2013) highlighted points of misalignment between the teacher's intention and the learners' perceptions, possible sources for misunderstandings, and the multiple modes online language teachers employ to create meaning and reinforce online learning. In using this cyclical approach, the data become a source for reflection, both, for the original participants of the learning event, and for the researchers. Participants are empowered by getting the chance to review their own usage, and reflect on their participation. This qualitative cycle becomes, in turn, yet another source of qualitative reflection for researchers, who can now observe discrepancies, affordances and limitations in online communication.

The example above helps to emphasise the benefits of a multimodal approach to data collection and analysis. Even beyond the enrichment of data, the resulting findings can be analysed from a number of different perspectives, including the socio-cultural ones. Satar, for example, used multimodal data to investigate how different modes can help users to project online presence (Satar 2010). In seeking the logic behind combining different modes to make meaning and to interact with others in online communities, a theory of online pragmatics as distinct from face-to-face or intercultural pragmatics can be established, based on a qualitative approach.

3.2.2 Mixed method: Eyetracking student study

In a different study, Stickler and Shi (2015a) used eyetracking to pinpoint the learners' attention during online language classes. Eyetracking is a method commonly used in Human-Computer-Interaction, for example usability studies, and also in psycholinguistic methods in applied linguistics, for example reading research. In our study, eyetracking plays an ancillary role to produce visible data for stimulated recall interviews. By showing learners their eye movements in gazeplot videos that overlay gaze focus over a replay of an online tutorial, we

stimulate a discussion about attention focus, learning strategies, areas of interest and areas of difficulty for the online language learner.

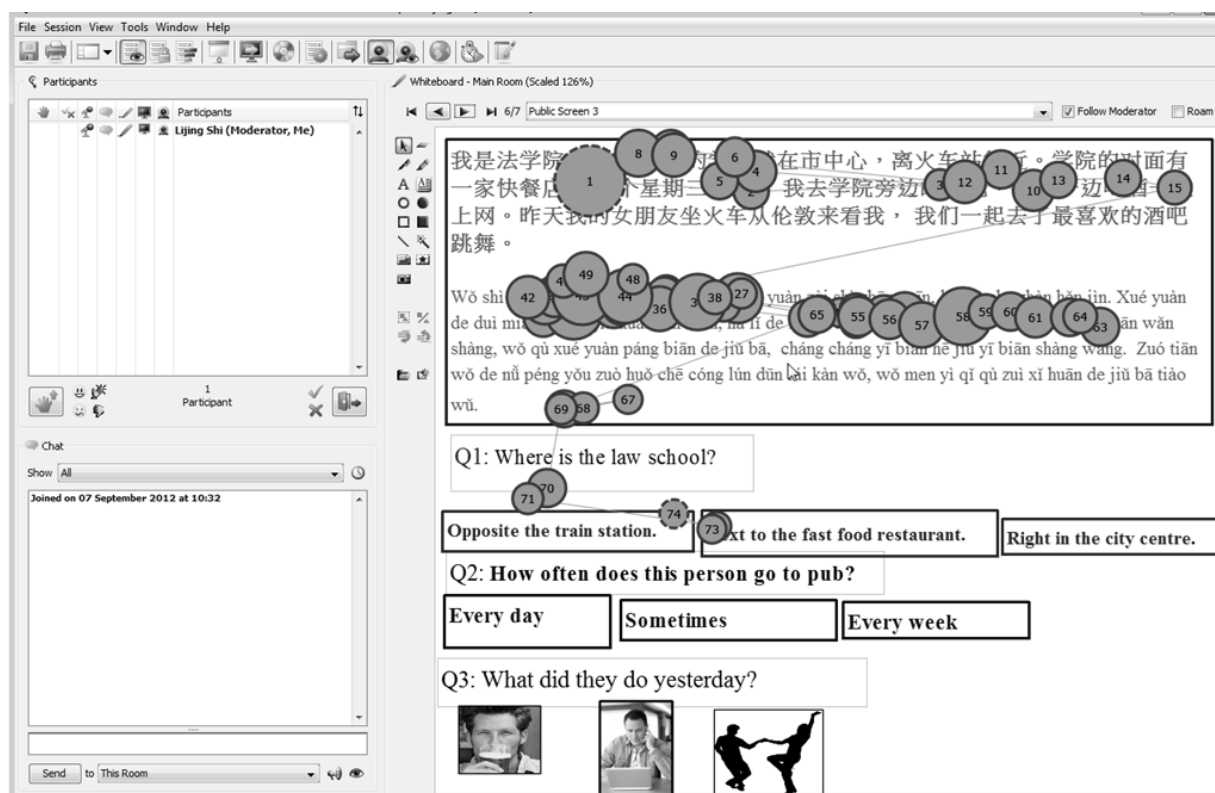


Figure 6: Gazeplot of eyetracking during a Chinese reading task

The main findings of this study are the differences between the areas of interest in the reading tasks done by students working on their own and during interactive speaking tasks where attention inevitably moves to the social areas and to the representations of fellow students' presence (Stickler and Shi 2015a).

Eyetracking has the potential to enhance our knowledge about online learning but not only in the expected way of providing more detailed information about gaze movements with their purported link to attention focus. A less obvious benefit of using eyetracking data as part of a carefully planned mix of methods is its potential to stimulate reflection and speculation about the learning strategies in users themselves. Similar to the above mentioned study using multimodal transcription (Stickler and Shi 2013) but more immediate in its application, eyetracking combined with stimulated recall can bring the users' views and reflections to the foreground, and make the participants truly participatory in a qualitative study. So, in addition to confirming our professional intuition about the importance of the social presence in online learning spaces, this process of the qualitative cycle widens the perspective of the CALL

researcher by intertwining data from the outside of the learner experience with an insider view.

3.2.3 Mixed method: Eyetracking teacher study

The complex method developed by Stickler and Shi (2015a) for investigating online learners' behaviour and thoughts during language tutorials was re-used in a recent study with online teachers. Their reflections on the teaching strategies, online language classroom management, and their own cultures of teaching brought to light reflections on the complex task of teaching in an environment mediated not only by technology and by the use of a second language but often also by a difference in the understanding of learning and teaching ("didactics" or "pedagogy") between the learners and their teacher (Stickler and Shi 2015b).

Our study revealed the potential of this research approach to unearth a rich field of reflective practitioners' understanding of their own practice and a source of training materials for future online language teachers. On a more theoretical level, combining tutors' and students' perspectives on a shared online learning space opens up a route for investigating what we tentatively call "the culture of online language teaching and learning"; a space that is mediated not only by a second language (as all language classrooms are), not only by technology (as all online classrooms are) but in addition also by a negotiated understanding of what constitutes language learning in an online environment.

4 Why do qualitative research in CALL?

The benefits of qualitative research in CALL will have become obvious from the examples in the previous section: added information, a different perspective, new questions, and innovative methods. These aspects promise an advance in knowledge, whether one relies mainly on the rich sources of quantitative data easily accessible or on the rich potential for innovative methods applied to the naturally occurring language learning and language use happening in online spaces. If we consider these two options – the data focused and the method focused one – as two extreme points of a scale, in-between those two points we find numerous options for mixed method research. Any number of combinations of the qualitative and quantitative method can be employed – as long as the researcher is conscious of the

underlying paradigms (Stickler and Hampel 2015). In mixing methods and approaches (see for example, Onwuegbuzie and Frels 2013) the researcher needs to justify the selection and ensure coherence with the overall research paradigm, be that positivist, relativist or post-structuralist.

The selection of a research paradigm, however, is not only a question of epistemological choice but also carries ethical implications: researchers consider who the study will benefit, what good it will do – apart from advancing knowledge, and how participants are being treated. In the studies described above, participants have an ethical right to benefit from their contributions; the indirect benefit of a promise of future development of better teaching might not be enough to justify their cognitive and time investments. A direct result in enhanced reflectivity and a better understanding of the processes of learning a language online can add value to the research, not only for the researchers but also for the participants.

5 Conclusion

To summarise the main thrust of the argument in this chapter, CALL is a field that lends itself to quantitative, qualitative and mixed method research. It aligns with different disciplines thus linking different traditions of research, different paradigms and epistemological assumptions. The positive aspect of this true interdisciplinarity is that CALL researchers can learn from different fields, methods, etc. This opens up exciting new avenues of research. On the other hand, the onus for making informed decisions about the type of research to undertake, be it quantitative or qualitative, applied or theoretical, mixed method or purist, remains with the CALL researcher. This decision is based on a number of factors: the convictions and beliefs held by the researcher – explicitly or not – her or his ontological stance and epistemological assumptions will play a role and have consequences for all steps of the research, its presentation, and publication. The choice also has ethical implications: it needs to take into account the sustainable use of resources available for intellectual work, the potential beneficiaries of each study, and the long-term consequences of decisions taken.

In its position of moving in from the “margins” (Coleman 2005) CALL research has much to offer to applied linguistics research in general:

- a fresh perspective on fundamental choices to be made in aligning research with different disciplines and societal needs;
- a plethora of exciting new methods in innovative mixed method combinations;

- and ample experience in researching Computer Mediated Communication (CMC), a contemporary form of communication which is rapidly becoming normalised.

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Zusammenfassung

Dieser Beitrag vermittelt einen Überblick über computergestützten Sprachenunterricht (CALL: Computer Assisted Language Learning), seine Entwicklung und gegenwärtige Trends. Unter Berücksichtigung des historischen Hintergrundes werden Argumente für die Verwendung neuer Methoden in der CALL-Forschung, insbesondere qualitativer Methoden, präsentiert und für den vermehrten Einsatz qualitativer und integrativer Forschungsansätze plädiert.

Beispiele für qualitative Studien kommen aus dem Bereich des Fernunterrichts an der Open University im Vereinigten Königreich, spezifisch des Sprachenunterrichts. Die Open University ist die größte Institution ihrer Art, nicht nur in Großbritannien, sondern in Europa. Ihr Auftrag ist die Bildung Erwachsener in allen Bereichen, unbeschleunigt ihrer vorherigen Qualifikationen. Die Forschungsbeispiele aus dieser Institution bilden die Grundlage um Reichweite und Möglichkeiten qualitativer Forschung zu diskutieren.