Editorial

Teacher education research in CALL and CMC: more in demand than ever

NICOLAS GUICHON

*Université de Lyon 2, Centre de langues, Bâtiment O, 5, Avenue Pierre
Mendès-France, 69676 Bron., France
(email: nicolas.guichon@univ-lyon2.fr)*

MIRJAM HAUCK

*The Open University, Walton Hall, Milton Keynes, UK
(email: M.Hauck@open.ac.uk)*

At the EUROCALL conference 2009 in Gandia we, the editors of this special issue decided to blow a breath of fresh air into the Special Interest Group for Teacher Education and were overwhelmed by the response we received during the initial meeting. One of the outcomes was the decision to organize a smaller, 'between conferences' research seminar for those among us who are involved – both as practitioners as well as researchers – in CALL and CMC-based language teaching. Another decision was that the event should have a narrower focus than the much wider themes of the annual EUROCALL conferences. In May 2010, then, the "European workshop on teacher education in CALL: towards a research agenda", took place at the Institut National de Recherche Pédagogique (INRP) in Lyon over two and a half days. It provided the opportunity to exchange experiences and catch up with developments in the field in a convivial atmosphere and served as a springboard for setting up new research partnerships among participants. The workshop was followed by a call for contributions to an issue of *ReCALL* on "CALL and CMC Teacher Education research: enduring questions, emerging methodologies". Four out of the six contributions in this issue are from colleagues who gave presentations in Lyon, and two were selected from other submissions that were received. We hope that you will find the articles as insightful and thought-provoking as the reviewers and we did and would like to take this opportunity to thank the members of the scientific committee for their support. Most of them also served as reviewers for this special issue.

While the use of digital technologies in language education has been growing over the last fifteen years, pedagogical developments and methodological reflection have hardly kept pace. Unsurprisingly, teacher training continues to feature high on the CALL research agenda and there is increasing interest in dedicated events such as the Lyon workshop, or the one held this year in collaboration with EUROCALL's CMC SIG at the Universitat Autònoma de Barcelona. The ensuing publications such as

this collection as well as other recent volumes and articles (see, for example, Dooly, 2009; Guichon, 2009; Hampel, 2009; Hauck & Stickler 2006; Hong 2010; Hubbard & Levy, 2006; Kassen *et al.*, 2008; Stockwell, 2009) bear witness to this development.

As Stockwell (2009: 1) observes and Cutrim Schmid (this issue) quite rightly reminds us "[t]his attention is indicative of greater recognition of the importance of CALL practitioners having sufficient grounding in CALL theory and practice, as well as knowledge of what technologies are available to them in order to be able to effectively implement CALL in their specific language learning environments".

In what follows we attempt to address enduring questions in research on teacher education for CALL and CMC-based language learning and a variety of methodological approaches, both traditional and emerging. The contributions explore issues relevant for both novice and experienced colleagues when embarking on teaching languages with information and communication technologies (ICTs) both in more traditional classroom settings as well as in online only contexts. We believe that insights gained from both these perspectives can inform and enrich current and future research endeavours and teaching practice. For the sake of clarity, we will use *teacher* to refer to classroom teaching and *tutor* to refer to online teaching even though this distinction poses epistemological issues.

CALL and CMC teacher education research: how far have we come?

The role of teachers and tutors in technology-enhanced contexts has long been under-explored by CALL researchers, as if language learning could occur thanks to the attraction of tools and as a result of the potential for enhanced learner autonomy. Yet, already more than a decade ago, while reporting findings from the Framework for Language Use in Environments Embedded in New Technology (FLUENT) project from the tutors' point of view, and focusing on how learner autonomy and the tutor role were affected by virtual environments, Hauck and Haezewindt (1999) drawing on Dias (1998) concluded that the tutor was the lynchpin around which successful online learning events revolve. Around the same time while exploring different types of pedagogical intervention and their impact on learner performance in distance language education contexts, Lamy and Goodfellow (1998) started to address the issue of mediation which led to a re-conceptualisation of the tutor's role in online environments and has contributed to enrich reflections on teacher roles in more classical school settings (Guichon, in press). In 2000 Lantolf draws our attention yet again to the mediating role of a number of factors in second language acquisition such as teacher and peers, setting, language and technology, and in 2003, in the context of internet-mediated intercultural foreign language education, Belz states that "the importance (but not necessarily the prominence) of the teacher and, ultimately, teacher education programmes […] increases rather than diminishes" (*op. cit.*: 92).

Today the key role played by teachers in mediating online language learning based on the ability to assess the affordances of any given tool – the possibilities and constraints for making meaning and communication offered by the available modes (Hampel, 2006) – and the ability to use these according to the learners' needs, task demands, and desired learning outcomes, is widely acknowledged. Indeed, if technologies are integrated into pedagogical practices in an arbitrary fashion, or, if used inadequately,

their true additional value to language learning could be quite limited, if not highly questionable. Hence, the importance of adequate training programmes for CALL and CMC-based language teaching informed by pedagogical considerations and suitable theoretical frameworks.

Although – as Grosbois (this issue) observes – the scope of research in this field is wide, four key areas can be identified: assessment of the use of technologies in teachers' practices, identification of pre- and in-service teachers' attitudes towards technologies, definition of a repertoire of techno-pedagogical competences, and reflections on training content and experiences. These four areas are discussed in detail below.

Assessing the use of technologies in teachers' practices

In 1998 Moore *et al.* conducted a survey on the use of technologies with 400 teachers from Texas which revealed that the great majority of participants did not use computers and the Internet to teach the target language and culture. More than a decade later, surveys conducted in Spain with primary teachers (Dooly, 2009) and France with secondary school language teachers (Guichon, in press) indicate that, although the use of technologies has seen a rise for personal and professional purposes, few changes can be detected in actual pedagogical practices (see also Fuchs, 2008). Dooly (2009) suggests that the gap might still be too wide between how technologies are presented during training programmes and what teachers are really able to do once they start their professional life. This imbalance raises an issue also underscored by Parks *et al.* (2003): institutional and contextual factors have hardly been taken into account in most studies dealing with language teachers' use of ICT. If Degache and Nissen (2008) could detect an improvement in the use of technologies at their university, they had to acknowledge the fact that their institution fostered this trend by providing financial and infrastructural support and by running regular hands-on workshops and organising conferences.

An exception in this respect are distance education settings such as at the British Open University's Department of Languages where the arrival of audio-conferencing applications in the mid/late nineties made it possible to take the "distance" out of distance language learning and created welcome opportunities for students to improve their speaking skills. This led to the systematic introduction of online tutorials from 2002 onwards accompanied by tutor training and investigations of the changing tutor role (see, for example, Hauck & Hampel, 2005; Shield, Hewer & Hauck, 2001). Thus, Beaven *et al.* (2010) posit quite rightly that it is the given institutional context that determines expectations in relation to the use of ICT in teaching and the degree to which technology integration is actually realisable.

Pre- and in-service teachers' attitudes towards technologies

Teachers' attitudes have been found to be one of the decisive factors when it comes to using ICTs in language teaching[1] (Kessler, 2007; Dooly, 2009; Guichon, in press) as

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[1] The first large study in this regard covering different school subjects was the Apple Classrooms of Tomorrow (ACOT) Project which ran for 10 years. The findings were published by Haymore Sandholtz *et al.* (1997). This was followed up by others such as Cuban (2001).

this necessitates a redefinition of competences, and usually also a fundamental reconsideration of teachers' professional identity (see Meskill and Sadykova and Comas Quinn, this issue). In line with Woodward (2010) Beaven *et al.* (2010) propose a professional life cycle model for teachers with different developmental stages of their self-perception as education professionals. They argue that teacher training in the area of ICT has to take account of the various phases as the needs of novice teachers, for example, are distinctly different from colleagues going through a phase of reassessment of their role and practice or those experiencing a period of self-doubt.

To address the issue of teachers' (self-) perceptions, researchers have generally drawn on semi-structured interviews and stimulated recall protocols (see also Cutrim Schmid and Whyte, this issue) in an attempt to assess anxiety or confidence levels reported by teachers when using online tools. Dooly (2009) concludes one of her studies by reporting that teachers, far from being conservative, are eager to bring changes to their practice. Yet, changes associated with the use of technologies can prove intimidating for language professionals, be they novice or expert, and lead to misgivings. It is therefore not surprising that rather than being left to their own devices and having to engage in non-formal learning about ICT integration, the language teachers from 25 European countries who took part in the survey carried out by Beaven *et al.* (2010) expressed a strong wish to be trained by qualified professionals.

For Peters (2006: 163–4), reticence to use technologies can come from worries about the reliability of equipment or the lack of technical support but also from deeper apprehensions, such as the fear of losing control when learners are working on the Internet or the fear of losing face in front of the learners if the equipment does not work properly. These fears need to be identified and brought to the fore so that constructive solutions can be proposed. Whether in training or in service, the habit of working collegially, in an atmosphere where difficulties are not set aside but confronted and addressed, where in true socio-constructivist spirit everyone contributes their skills and knowledge, can prove crucial for informed technology use. Besides, as Kessler and Plakans (2008) point out, the feeling of self-confidence also depends to a large degree on perceived ease of access to and usability of tools and of the perceived added value in terms of pedagogical practices. This echoes one of Zhao and Cziko's (2001, quoted in Beaven *et al.*, 2010: 9) conditions for ICT adoption by teachers: they "must believe that technology can more effectively meet a higher-level goal than what has previously been used".

If technologies can give rise to self-doubt, at least in the initial phase of discovery, teachers have to be helped to integrate them in a carefully thought out and progressive manner so that anxieties can be overcome.

It is difficult to determine whether attitude is a valid indicator of professional competence as is suggested by Kessler (2007), but certain intellectual abilities such as curiosity, tolerance of ambiguity, and a propensity for collaborative work can facilitate change in self-perceptions and the move from one stage in the professional life cycle to the next, and thus accelerate ICT integration. Moreover, investigations of anxiety and self-confidence should not only rely on researchers studying teachers' discourse on their practices. They need to include teachers as researchers who engage in systematic *in vivo* observation of how their practices evolve over time and how they gradually enrich their professional repertoire and become aware of the impact that this evolution has on their self-efficacy beliefs.

Defining a repertoire of techno-pedagogical competences

Several studies have attempted to establish what might be called teachers' techno-pedagogical competences (Levy, 1997; Peters, 2006). As early as 1999 mentions the professional challenges language teachers find themselves confronted with: apart from familiarity with language pedagogy, they are supposed to master a range of technological applications and take on new roles pertaining to task design, tutoring and pedagogical mediation. Shield *et al.* (2001) building on Hauck and Haezewindt (1999) come up with an overview of tutor roles and associated administrative, cognitive and social skills and relate those to learners' perceptions of tutors. Since then several directions have been proposed to apprehend what a techno-pedagogical competence encompasses (Bangou, 2006; Fuchs, 2006; Peters, 2006; Thomas & Reinders, 2010; Wong & Benson, 2006). It includes the capacity to:

- Assess the potential and limits of technologies for language and culture learning;
- Carry out a needs analysis to introduce adequate technologies at appropriate moments in a pedagogical sequence;
- Handle basic tools and applications, and solve simple technical problems;
- Design appropriate tasks;
- Design for interactions within and outside the classroom in view of the technologies' affordances;
- Rethink the contract with learners and colleagues;
- Manage time and optimize the integration of technologies.

Some of these abilities are also reflected in Hampel and Stickler's (2005) "pyramid of skills" which includes from the bottom up skills related to dealing with the technology at hand and using its advantages, then social skills of community building, followed by language teaching skills, and finally the ability to teach creatively and develop a personal teaching style in an online medium.

An important first step is the development of what Guichon (in press) calls "critical semiotic awareness", i.e., teachers' capacity to adjust the potential of any tool to their pedagogical objectives and to the relation they wish to establish with their (distant) students, so that pedagogical skills gradually become semio-pedagogical ones and thus reflect the demands made on language professionals.

However, acquiring such a repertoire of skills will continue to depend on teachers' ability and readiness to re-think their practice in order to prepare the ground for successful technology integration (Bangou, 2006).

Research on teacher training: content and practice

Kessler's (2006) study assesses the training of a total of 240 language teachers and reveals general dissatisfaction in terms of ICT integration. It indicates that reflection on the content and format of teacher training in CALL and CMC is still in its infancy and that teacher training programmes usually depend more on the teaching philosophy of individual training institutions or government agencies than on a consensus reached as a result of research.

Researchers who have addressed the issue of teacher training have generally used their own experience as trainers to propose a few guidelines which can be summarized as follows:

- Share out the techno-pedagogical components all along the training programme instead of making them the content of a stand-alone module (Peters, 2006);
- Anchor teacher training and experiment with technologies in a specific setting, so that trainees develop a better understanding of institutional constraints (Egbert, Paulus & Nakamichi, 2002);
- Focus on the development of competences that can be transferred to other educational contexts (Slaouti & Motteram, 2006);
- Develop basic technical skills that can readily be used instead of training teachers to use a bespoke application or programme that might become obsolete quickly (Kessler, 2006);
- Make sure trainees put pedagogical objectives before technological ones (Fuchs, 2006);
- Adopt constructivist or socio-constructivist approaches to language learning to help trainees conceptualize the use of tools in a pertinent way (Parks *et al.*, 2003);
- Develop collaboration skills among trainees (Parks *et al.*, 2003).

Thus the training challenges are organisational, theoretical, strategic and pedagogical.

Interestingly, research has initially relied mainly on questionnaires and interviews to explore the areas outlined above, teachers' perceptions and content of training programmes in particular. More recently, however, we have witnessed a move towards action research and reflective practice.

Belz and Müller-Hartmann (2003) represent an early example of Allwright's (2003) "exploratory practice" with a "self-reflective case study" of their "development as teacher-learners *of* telecollaboration *in* telecollaboration". Another example comes from Lewis (2006) who draws on recorded self-reflection (teaching journal) and action research in the shape of observation by a "critical friend" as well as discussions with colleagues in an online forum to equip himself with teaching skills for a multimodal online environment.

Overall four different approaches to observation and analysis can be identified in their relation to practice in CALL and CMC-based teacher education:

Table 1 *Four different approaches to CALL and CMC-based teacher education*

Practice	Process	Purpose
as observed and analysed by teachers	action research, self-confrontation	self-improvement, self-efficacy
as observed and analysed by other teachers	confrontation with other teachers' practice	comparison, broadening of repertoire of skills
as observed and analysed by researchers	confrontation with research findings	description; identification of categories
as observed and analysed by researchers also involved as teacher trainers	action research	description geared towards teacher training

The proposed categories are not clear-cut and there is some overlap if the observer is not only a teacher, but also a researcher and/or a teacher trainer, changing therefore the lens through which practice is studied as well as the depth of the ensuing analysis. Moreover these four approaches to reflection on situated technology-mediated practice serve different purposes. Observing other teachers' activities and reflecting on one's own practice are different symbolic and cognitive processes. In the same manner, whether or not the researcher is also directly involved in a teacher training programme him/herself will influence his/her focus. Thus, practice is not explored in avoid but rather in relation to the actors involved and their motivations and intentions.

These approaches have also informed the studies presented and discussed in the articles in the present issue.

The journal opens with Meskill and Sadykova who report on a study with experienced EFL educators from Eastern Europe who – as part of their professional development – had the opportunity to observe and analyse instructional conversation strategies in Moodle between their own students and "cultural experts" in the US. These were enrolled in a PhD programme in language technology and engaged with the EFL students in learner-centred asynchronous threaded discussions. It was hoped that the EFL educators would eventually want to take on and apply the observed conversation strategies in their own teaching as they move their courses to blended and fully online settings. Meskill and Sadykova draw on the so-called "fishbowl" technique as an approach to foster observation of human interaction – here, EFL learners and cultural experts – and joint reflection on what was being observed. The in-service teacher trainees, they hypothesized, would benefit from witnessing how their students engage with models who know how to make optimal use of the affordances of the instructional environment. Thus they acknowledge the necessity to make language educators aware of the constraints and possibilities for making meaning and communicating in online venues (Hampel, 2006).

In a similar vein Comas-Quinn draws our attention to the required pedagogical understanding of the affordances of the online medium and an acceptance by the teacher of his or her new role and identity in this medium. Her contribution follows the tradition of work that has explored teachers' own experiences and perspectives on their readiness and willingness to engage with new technologies in the language classroom. Comas-Quinn points to Tait (2002) who proposes to involve teachers in the design, delivery and evaluation of training activities as this has been shown to promote the desired deeper understanding. She takes White and Ding's (2009) "ideal teacher self perspective" as the starting point for her theoretical considerations argues, with Kubanyiova (2009), that "effective training must both destabilize teachers' existing views of their role and identity and support them in building new perspectives which match the training outcomes – what Wenger (1998) calls 'learning as becoming'". Similarly Guichon (in press) advocates "retrospection", i.e., training procedures which help teachers critically analyse their practice and include initial imbalance inciting trainees to resist routines and to shape new professional identities.

Comas-Quinn concludes that training practices designed to guide language teachers in their adoption of online technologies still focus primarily on knowledge and skills

development and undervalue the required professional transformation, i.e., learning to become an online teacher. Thus she confirms Hauck and Stickler's (2006) prediction that "it will take probably a little longer to establish not only *what it takes to teach online* but also to know *how we learn to teach online*" (*op. cit.*: 472).

Imbalance, or "loss of a stable state" (Schőn 1973), as a stepping stone for change in existing practices, is also part of the journey the student teachers in Antoniadou's network-based collaborative project embarked on. The exchange was based on the use of Second Life and brought student teachers in Spain together with pre-service trainees in the US. In line with Dooly (2009) the aim of the project was to foster participants' understanding of the added pedagogical value of such an exchange and to inspire them to transfer this knowledge into their classrooms. Drawing on Cultural Historic Activity Theory (CHAT) and the concept of contradictions Antoniadou offers us a new way of conceptualising inter- and intra-institutional as well as technology-based tensions which have been referred to in the literature as potential "pitfalls" of such online encounters (see, for example, O'Dowd & Ritter, 2006). Yet, in agreement with Basharina (2007) she argues that misalignment of study programmes and other contradictory elements are a *sine qua non* in telecollaboration and that training for mutual awareness and understanding of the different sociocultural and educational factors concerned should become part of situated network-based learning during Initial Teacher Education. This approach, Antoniadou suggests, increases the likelihood that an online professional community of teachers will develop during the exchange and that participants will repeat telecollaborative activity in their future classrooms.

In order to bridge the teacher-researcher gap, Cutrim Schmid and Whyte use video recordings as a data collection instrument for their studies and thus as part of their methodology, but also as a way of fostering reflective practice and professional development. Cutrim Schmid's study revolves around the use of Interactive White-boards for the teaching of English in secondary schools while in Whyte's case primary school classes were paired up and linked together via videoconferencing to learn English. Cutrim Schmid also provides a brief overview of methodologies used in teacher professional development research so far, and summarizes various approaches to data collection in the literature covering more traditional instruments (e.g., interviews) and those exploiting the affordances of Web 2.0 technology such as video-stimulated reflection (VSR) to evaluate video web-based online teaching sessions (Guichon, 2009). Like Guichon, Cutrim Schmid uses VSR both as a data collection method and a professional development tool. In her conclusions she highlights the participants' ambivalent attitudes towards VSRs, self-reflection and self-evaluation, and draws our attention to the challenging, often even painful teacher experiences with this approach.

In Whyte's study, experienced teachers of English were joined by less experienced colleagues and both classes were taught in tandem via videoconference. Similar to Meskill's and Sadykova's set up, the "experts", in this case experienced language teachers, were supposed to serve as "resources" for the novices. Yet in Whyte's study both were involved hands on with the online teaching instead of the latter only observing the interaction of the former with his/her learners. Among the most striking findings of her investigation was the lack of teacher comments related to

language learning in the episodes played during the VSR sessions. Another unexpected finding was the lack of spontaneous interaction among participants in the video-conferencing sessions due to over-preparation of learners by learner-centred teachers who associated rehearsal with promotion of learner autonomy and seemed to perceive second language acquisition as a product rather than a process. Thus – like Meskill, Sadykova and Comas-Quinn – Whyte underscores the need for teachers to be fully aware of the respective affordances of bespoke tools and applications before being asked to design language learning activities and/or to run entire online sessions based on their use. She also re-iterates Hubbard's and Levy's (2006) advice for teacher development in CALL, i.e., that pedagogical and technological training should ideally be integrated with one another.

Grosbois reports on a CMC-based teacher training programme for future primary school teachers in France who engaged in Internet-mediated exchanges with pre-service teachers from the UK. The aim of this teacher programme was to improve their language skills while developing a web-based resource for cultural learning aimed at French primary school children. Corroborating findings from previous similar telecollaborative studies Grosbois observed an increase in participant motivation through engagement in collective problem solving linked to a professional domain. As a result the Master's degree for primary teacher trainees at the author's institution now offers students the opportunity to take part in a virtual school – based on the use of Web 2.0 tools – and combines a project-oriented approach to L2 learning with professionally relevant problem-solving. Grosbois concedes, though, that this approach – which she sees as a specifically French approach to the field of teacher training – clearly focuses on future teachers' development of foreign language skills and that the development of pedagogical expertise in terms of ICT use is rather a welcome by-product than an aim in itself.

A tentative research agenda

Common features of most of the training and/or research on training in the studies presented above are situated learning and reflective practice, with some using the same methodology for both data collection and training purposes in an attempt to move towards collaborative researcher-teacher research. This approach is typical of action research where teachers do indeed turn researcher to gain a better understanding of and potentially amend their classroom practices. Dörnyei (2007: 191–192) reminds us though that "teachers usually lack (a) the time, (b) the incentives, and (c) the expertise or professional support to get meaningfully engaged with research" and argues that it should therefore be an integral part of pre-service and in-service training so that it becomes a natural part of teachers' professional practice, or, as Müller-Hartmann (in press) puts it, "to instil an attitude of professional development as a continuous process of action and reflection".

Picking up Dörnyei's conclusion we propose that initial and in-service CALL and CMC-based teacher education should not only follow Hoven's (2006) "experiential modelling approach" where teachers/tutors as learners model and experience the tools and processes they are supposed to use in their (future) practice. It should also systematically instruct trainees in researching their own classrooms, i.e., in carrying

out action research, more specifically "exploratory practice" or inclusive practitioner research as understood by Allwright and Hanks (2009) which allows them to develop their "general understandings of learners and also to enable learners to develop their understandings, and so develop as practitioners of learning" (*op.cit.*: 142).

Allwright and Hanks criticize the more traditional approach to action research with its focus on changing and improving practice which undervalues the element of "understanding" in research: "AR [action research] starts out as an *intention to change* in order to solve a problem, or at least to introduce an innovation. EP [exploratory practice] starts out with an *intention to try to understand*, rather than change" (*ibid.*: 172–173).

Yet as Müller-Hartmann (in press) points out in relation to the use of exploratory practice in telecollaborative teacher education, two levels of research need to be distinguished. The course instructors follow an exploratory practice approach to their research in their attempt to understand the complex processes involved in developing teacher trainees' competences. At the same time, trainees develop a reflective practice attitude which allows them to eventually do practitioner research themselves in their future professional contexts.

We believe that this also holds true for CALL and CMC-based teacher education research in general, i.e., beyond telecollaborative settings, particularly in situations where teacher/tutor, trainer and researcher are all embodied in one single person.

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