ReCALL **21**(3): 352–369. 2009 © European Association for Computer Assisted Language Learning
doi:10.1017/S0958344009990085 Printed in the United Kingdom

New competencies in a new era? Examining the impact of a teacher training project

MELINDA DOOLY

G5-107, Ciències de l'Educació, Campus Bellaterra, Universitat Autònoma de Barcelona, 08193 Cerdanyola del Vallès (Barcelona), Spain
(email: melindaann.dooly@uab.cat)

Abstract

This article describes follow-up research aimed at exploring the long-term impact on participants of a teacher training course that integrated a variety of projects focusing on ICT use in language teaching. Internet in education is often promoted for its features that allow for new opportunities for constructivist approaches in the classroom. Nevertheless, this will not simply happen on its own. Teacher education must help shift students teachers' pedagogical premise toward approaches that promote autonomous learning and collaborative problem-solving. Teacher training can highlight how this can be supported through ICT.

The article chronicles the first year following the closure of a teacher-training project, paying particular attention to current practices and perspectives of the primary and secondary education teachers involved. Data were gathered through questionnaires and semi-structured e-mail interviews, along with field notes and ongoing observation of participants' current teaching environments in order to generate material for triangulation and contextual understanding of the data. The analysis of whether the project described herein has contributed to reducing the gap between the theoretical framework of teaching competences in telecollaboration and its transferral to teaching praxis is significant for future input on other training programmes.

Keywords: ICT teacher training, telecollaboration, ICT teacher competencies, learner-centred

1 Introduction

> Little research has attempted to identify the relationship between attitudes towards computer technology, teacher preparation, and the perceived ability of a teacher to effectively integrate technology into their teaching practice. (Abbitt & Klett, 2007: 29)

While not questioning the validity of Abbitt and Klett's (2007) statement, a review of literature on the topic of teacher training and new technology gives the immediate impression that recently considerable work and effort has been put into endeavours to improve teachers' knowledge, attitudes and preparation so that they can efficiently use ICT in their teaching (Bonk *et al*., 1996; Smerdon *et al*., 2000; Burniske & Monke, 2001; Salaberry, 2001; Hampel & Hauck, 2004). Additionally, programmes

across the European Union are being implemented to ensure that European teachers in all fields of education are better equipped and more willing to integrate technology into their everyday teaching routines. To cite an illustrative example, the European Commission has begun the elaboration of a new strategy for ICT research and innovation, to be unveiled in 2009. This is part of the seven year framework programme focusing on the development of Europe's Information Society as a key component of different society pillars such as education, health, business, research and innovation[1].

Clearly, efforts are being made. The focus of the research described herein is, however, on the *outcome* of one such effort. In their research on differences in discourse between expert and novice teachers when talking about technology, Meskill *et al*. conclude that "training [novice teachers] may not be sufficient for the needed conceptual development that leads to the kind of ease and repertoire characteristic of expert users" (2002: 54). This underscores the importance of the way in which training is conceptualized and implemented as well as highlighting the need for more research into the outcomes of such specific training and learning opportunities.

According to Egbert *et al*. there is a need for more studies that "explore transfer from the practical content of teacher-education technology courses to the classroom" (2002: 108). These authors call for more research into how "teachers learn about CALL-based activities"; more study into the ways in which "what they [have] learned in their coursework impact[s] their current teaching contexts"; "what factors influence whether they use computers in their classrooms" and how "participants continue to acquire and master new ideas in CALL after formal coursework ends" (*ibid.*). Moreover, recent studies into teachers' use of new technologies show that, on the whole, teachers have only recently begun to integrate the use of ICT tools into their teaching practices, and in most cases their use of ICT does not include network-based learning opportunities, network-based collaborative projects or any real attempts to use Web 2.0 for learning purposes (BECTA 2008; Greenhow, 2007). Clearly, there appears to be a gap between teacher training that aims to provide "isolated coursework in CALL" and a focus on "the development of a sequence of situated technology experiences for teachers" (Egbert *et al*., 2002: 122; see also Haddad, 2003; Robinson & Latchem, 2003; Sime & Priestley, 2005; Almås & Krumsvik, 2008).

These studies demonstrate the importance of teacher training content that helps novice (and expert) teachers learn how to efficiently apply technology in their teaching approach. This includes providing useful ways to bridge the gap between teacher training and teacher reality so that novice teachers are able to face everyday constraints they may come across when trying to implement ICT-based or network-based activities and projects in their teaching. Considering that organizational constraints such as school culture, administration, timeframes and technological infrastructure can influence what teachers do, providing realistic solutions to the everyday challenges may help teachers gain confidence and have more positive attitudes towards the use of ICT in their teaching. Also, providing "situated learning" that integrates theory and practice in the use of ICT may prove to be an

[1] See http://ec.europa.eu/information_society/tl/edutra/inno/index_en.htm

important element for promoting better integration of ICT and teaching (see Egbert, 2006; Arnold *et al.*, 2007 for a more thorough discussion of situated learning and communities of practice in relation to teacher training and ICT use).

It was within this perspective of aiming to improve teachers' competences and to help them gain confidence and a positive attitude towards the use of technology in their teaching that this current research was carried out. The research gives a 'follow-up perspective' of various projects and training programmes carried out in Initial Teacher Training (ITT) in one course focused on English as a Foreign Language (EFL) Teaching Methods at an Education Faculty in Barcelona. The students were enrolled between September 2004 and May 2006.

2 Outline of the main teacher training project

The principal training project was part of an EU-funded project entitled MICaLL: Moderating Intercultural Collaboration and Language Learning[2]. The goal of the project was to create a supportive environment wherein teachers and teacher trainees could learn from one another through dialogic network-based interactions. Firstly, the project partners worked together to develop a Web portal that fit with their specific needs for exploring the possibilities of online collaborative projects. In this online workspace, the project partners could create virtual classrooms and project spaces for starting and managing telecollaborative projects, using whichever formats they felt best fit their projects. *En bref*, MICaLL encompassed a complex project design (a macro-project providing the framework for micro-projects which, in turn, provided essential input to the final output of the macro-project (input such as field-tested experiences, portal content, didactic material, research data and case studies).

Under the auspices of the main project, there was an array of smaller projects that were developed between teacher trainers and trainees (this took place in class and between partner institutions), all of which employed various technologies and platforms (e.g. wikis, forums, blogs). Following this, the trainees were required to design activity sequences that integrated the newly revised technology into their teaching. Importantly, the process of creating the teaching unit necessitated online collaboration with trainees enrolled in project partner institutions in other countries. Input from their experiences was used to research, analyse and compile information about the use of ICT in language teaching.

Following the online negotiation of their project designs, the trainees implemented the teaching units in the schools where they were doing their practice teaching, under

[2] 118762-NL-2004-C21. The project had 13 partners in 6 different countries: Faculty of Education, Universitat Autònoma de Barcelona, ES (project manager), Grund- und Hauptschule mit Werkrealschule Neckargemünd, DL); Kooperative Mittelschule, AT; CEIP Emili Carles i Tolrà, ES; CEIP Josep Orriol, ES; St. Gregorius School, NL, Základni škola Ūsti nad Labem, CZ; Gymnázium Severní Terasa Ústi Nad Labem, CZ; Faculteit Educatieve Opleidingen, Hogeschool van Utrecht, NL; Pedagogická fakulta, Universita J. E. Purkyně, CZ; Technologie et Sciences de l'Homme/COSTECH, FR; Pädagogische Hochschule Heidelberg, DL; Pädagogische Akademie des Bundes in Wien, AT; Christelijk Pedagogisch Centrum, NL.

the guidance of teachers who were also involved in the project. Finally, they 'debriefed' their online partners about the results of the projects they had designed together and discussed the similarities and differences in their experiences. Perhaps most importantly, the "focus of this project was not on ICT training (as it is felt that ICT tools are constantly changing); instead the emphasis was on 'hands-on' experience and exchange of knowledge between the teachers in order to construct new ideas and understanding for working in network-based environments" (Dooly, 2008: 67).

After three years of implementation of this type of interaction (over 500 pre-service teachers and 1,500 primary and secondary students were involved), the following products resulted from the project:

- Course project materials: all of the different projects implemented during the three years were made available online to teachers, teacher trainees and trainees involved in the project. The portal was opened to the general project after the three-year period of EU funding ended.
- Teachers' handbook: the content of the handbook derived from the participants' experience and was compiled through the data corpus consisting of questionnaires, self-assessment and partner-assessment reports, student feedback and partners' e-mails pertinent to the projects' development and implementation.
- Teacher training modules (using the aforementioned output): these have been implemented on a local level at two of the partner institutions since the end of the project.

3 Follow-up on impact: a look at the quantitative data

Some funding became available to study the impact of this project, especially focusing on individual teacher innovation in EFL methods. Following Endacott's (2005) point that it is artificial to try to describe research as either qualitative or quantitative since studies often have elements of both, the design of this research project included questionnaires and e-mail correspondence in the form of questions and answers. The area of study was limited to Spain because access to project participants in other countries was not feasible. The survey was designed to help determine the 'transferability' of teacher training that promoted a more innovative and ICT-supported practice in language learning.

The participants consisted of two focus groups, one of which was named the 'novice teachers' (members of this group had begun teaching in 2005 or later) and the other group was called the 'experienced teachers' (this group had begun their teaching before 2005). Participants from both groups had previously participated in the MICaLL project as teacher trainees or, in the case of the experienced teachers, as full partners.

There were 39 participants in the Novice group of whom 92% were female and 8% were male. The mean age was 25.2 years old and they had an average of three years of teaching experience. In the case of the experienced teachers, there were five participants, with a mean age of 33.2 years old. The average number of teaching years for this group was 12.2 (see Figure 1 for a comparison of age and years of experience).

Eighty-seven questionnaires were sent out to Spanish graduates who had participated in the MICaLL project. Since there was no possible way to gain access to

https://doi.org/10.1017/S0958344009990085 Published online by Cambridge University Press

Novice teachers		Experienced teachers	
Years of teaching	Ages	Years of teaching	Ages
14 teachers graduated in 2004	2 participants are 24 9 participants are 25 1 participant is 26 1 participant is 29 1 participant is 37	7 years teaching	28 years old
17 teachers graduated in 2005	2 participants are 23 14 participants are 24 1 participant is 28	16 years teaching	37 years old
8 teachers graduated in 2006	1 teacher is 21 5 teachers are 22 1 teacher is 24 2 teachers are 26	10 years teaching	31 years old
		8 years teaching	29 years old
		20 years teaching	41 years old

Fig. 1. Comparison of age and experience of research participants

updated contact details for the students from other countries, the scope of the research was limited to only one country out of the six involved in the project. Of these 87 questionnaires, 43 were returned, thus the response rate was around 50%. Four out of the 43 respondents were not teaching at the time of answering the questions so their responses were discarded, giving a response rate of 45%. Of the experienced teachers who had participated as full partners in the project, five teachers returned questionnaires out of the seven attempted contacts.

The questionnaire (originally in Catalan) was accompanied by an introductory letter explaining the questionnaire and a request for permission to use the answers, maintaining the respondents' anonymity (a second permission slip was attached to the contact e-mail which the respondents printed and sent by 'snail mail' or fax to the researcher). The questionnaire consisted of three parts. The first part dealt with general questions to establish background information (e.g. age, teaching context, years of teaching, etc.). The second part consisted of more specific questions about teaching practices. Some example questions from this part are:

- Are you currently involved in a project and/or individual endeavour that integrates ICT in teaching approach?
- Have you received any further training in ICT or teacher formation?
- How often do you use a computer for personal reasons? Where? (at home, at work).
- Do you use a computer to find information when planning classes?

The last part of the questionnaire was designed as an assessment of attitudes towards computers and computer courses (ACCC). This part of the questionnaire was an adaptation of a similar assessment instrument designed by Newby and Fisher (1996). These authors used the assessment instrument to examine students' attitudes towards computers and computer courses and it originally consisted of four scales, with each scale consisting of seven items. Each item was measured on a five-point Likert Scale of 1 to 5 (with some questions reversed).

Scale	Description	Sample
Anxiety	Extent to which the teacher feels comfortable using a computer in class	Working with a computer in class makes me very nervous (+)
Enjoyment	Extent to which the teacher enjoys using a computer in class	I enjoy teaching with a computer (+)
Usefulness of Computers	Extent to which the teacher believes computers are useful	My students' future career will require a knowledge of computers (+)

Fig. 2. Example of scale, description and associated question

However, because the focus of this research was on teachers' perceptions (rather than students' attitudes towards computer courses) and needed to take into consideration the respondents' actual use of computers in teaching, the questions had to be re-written. More importantly, because the questionnaire was received by electronic correspondence (rather than face-to-face requests), the probabilities of getting no response would have been incremented if the questionnaire had been too long or complicated for the respondents. Thus the questions were simplified and shortened to help ensure that responding would not be too time-consuming. The questions were also much more contextualized to use of computers in the classroom.

As mentioned earlier, the ACCC originally consisted of four scales: (i) anxiety, (ii) enjoyment, (iii) perceived usefulness of computers, and (iv) usefulness of course, with each scale consisting of seven items. These scales were changed to focus on (i) anxiety, (ii) enjoyment and (iii) perceived usefulness of computers in teaching, with each scale consisting of four items. Each item was measured on a five-point Likert Scale (5 = Strongly agree, 4 = Agree, 3 = Not sure, 2 = Disagree, 1 = Strongly disagree). Some of the questions were negatively worded and subsequently recoded so that after being recoded, higher subscale total scores indicated more comfort (less anxiety) with computer technology, and/or more enjoyment and higher perceived usefulness of computer technology. Figure 2 shows an example of scales, a sample description and a sample question associated with the scale and description.

Beginning with the second part of the questionnaire, it is possible to perceive some clear similarities in patterns of computer use in their teaching among the respondents, in both the novice and experienced teacher groups. Under the general descriptor of 'currently involved in a project and/or individual endeavour to integrate ICT into teaching approach', four areas were identified:

- Use of published language teaching computer resources
- Connection to Internet for receptive skills (reading/finding information; listening to oral texts, etc.)

https://doi.org/10.1017/S0958344009990085 Published online by Cambridge University Press

- Production of own materials for publication (school websites, online newspapers, blogs, wikis, etc.)
- Telecollaboration with other school partners.

Cuban, Kirkpatrick and Peck (2001) have argued that the use of computers in teaching may result in minimum innovation if there are not fundamental changes in attitudes and opportunities in the education system. "Teachers will adapt innovations to the contours of the self-contained classroom. New technologies will, paradoxically, sustain old practices" (Cuban *et al.*, 2001: 830). While it was not possible within the scope of this research to examine the instructional applications of technology of each of the teachers in this study, the questionnaire did provide indicators of the more prevalent ways in which computer resources were used among the groups.

The use of a computer for searching and downloading published language teaching computer resources is a common practice for both groups. Thirty-five out of 39 novice teachers (90%) and all of the experienced teachers claimed to frequently use the computer for this purpose. Going online for what can be called 'receptive' use (searching and downloading information, listening to oral texts) for practising a target language was also a fairly frequent activity. Sixteen out of 39 novice teachers mentioned this type of activity (41%) and 3 out of 5 experienced teachers stated that they used online reading and listening for language practice. Production of their own materials for publication (school websites, online newspapers, blogs, wikis, etc.) was less frequently practiced by both groups, with 4 out of 39 novice teachers involved in this kind of activity and 2 out of 5 experienced teachers participating in some type of production of material to post online.

Regarding projects or activities within the realm of telecollaboration with other school partners, the numbers were lower than any other area. Three out of 39 novice teachers (7%) were currently involved in some sort of telecollaborative event and none of the experienced teachers were participating in any type of telecollaboration that engages their students with other learners. Interestingly, although the numbers are low, the novice teachers are the group with some activities within the area of telecollaboration.

An underlying research question that was incorporated into the questionnaire dealt with the relationship between continued teacher training and increased use of new technologies in teaching approaches. As several authors have proposed, the link between a willingness to integrate technology into teaching practices and to adapt to new social demands must necessarily be accompanied by an openness to innovation in teaching and learning approaches.

> Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and much of it is available to students as well as teachers at the same time (Perraton, Robinson & Creed, 2001). As new concepts of learning have evolved, teachers are expected to facilitate learning and make it meaningful to individual learners rather than just to provide knowledge and skills. Modern developments of innovative technologies have provided new possibilities to teaching professions, but at the same time have placed more demands on teachers to learn how to use these new technologies in their teaching (Robinson & Latchem, 2003). These challenges ask teachers to

> continuously retrain themselves and acquire new knowledge and skills while maintaining their jobs (Carlson & Gadio, 2002). Then what can be done to help teachers meet these challenges? (Jung, 2005: 94)

With this premise in mind, the respondents were asked questions about continued education and/or training courses they had received after completing their initial teacher training (in the case of the novice teachers) and after the project was officially finished. This included specific courses on new technology as well as general teacher training (in any area of knowledge such as curriculum design, language courses and so on). They were also asked about any specific training focused on integrating new technologies into their teaching. Some of the novice teachers had recently enrolled in ICT courses, although the numbers were quite low (four out of 39) whereas none of the experienced teachers had taken any courses on ICT. The numbers were also quite low for general teacher training courses: five out of 39 novice teachers and 2 out of 5 experienced teachers had participated in this type of course.

Likewise, in this particular research study the amount of computer use for personal reasons was considerably higher than the groups' use of computers in classroom practice. Perhaps not surprisingly, all of the teachers in the study (novice and experienced) used e-mails on a daily basis. They also all stated that they used the Internet for preparing their classes: searching for materials to download, looking for new ideas or approaches to the features in their curriculum, making use of 'authentic material' for language classes, etc. There were some differences in frequency of use: the experienced teachers indicated that they sought Internet resources more often than the novice teachers. However, in other areas of personal use of the Internet, the novice teachers were more engaged in such activities as using online newspapers, seeking updates of personal interests (cinema, music, holiday information, etc.) as well as participating more in online communities – although participation in online communities was not very high for even the novice group.

None of the 39 respondents engaged in activity in online communities on a daily basis, just as none of them participated as frequently as every other day. There were only four out of the 39 who responded that they occasionally participated in online communities and the rest of the group said that they never participated in this type of activity. None of the experienced teachers claimed to take part in any online communities.

Turning to the third part of the questionnaire which dealt with the perceived attitudes of the two groups towards the use of computers and online resources in their teaching strategies and approaches, clearly both groups indicated a generally positive attitude towards the integration of technologies into teaching. This was especially true concerning student needs and overall usefulness of technology as a support for the learning process in the classroom. On a scale of 0 to 1, the median for the scale of 'usefulness of computers' for teaching and learning was considerably higher than in the other scales, reaching as high as 1 for the descriptor of 'helps in language learning' and .95 for the descriptor 'useful for learning new tools and skills'. In reference to the students' need for knowledge in this area for the future, the median was .74, however, in this scale the median did drop somewhat for the descriptor 'transferable to other areas of study', arriving at .41.

Nonetheless, the 'anxiety' scale indicated some negative perceptions of the use of computers in teacher praxis, especially in areas of preparation for its use. The median for the descriptor linked to needing extra time for preparation was .79 and .77 was the median for the need for technical assistance. Likewise, the teachers indicated that there was a certain anxiety associated with the likelihood that something technical might go wrong (.59) and a general feeling of nervousness about using new technology and going online in the classroom (.69).

Equally, the teachers held ambiguous perceptions concerning the amount of enjoyment the use of technology brought to classroom practice. Similar to the concerns demonstrated in the anxiety factor, the median for the descriptor related to 'preparation time is worthwhile in comparison to enjoyment' was .69 whereas the median for 'enjoy working with ICT in the classroom' was .82 and enjoyment of the teacher's role in introducing ICT was .85; both of which indicate that the teachers are generally positive about the role a teacher can have with the use of technology, but that they are also aware of the added time needed to carry out this role.

Researchers and practitioners have found that teacher trainers and teachers (pre- and in-service teachers) usually pass through a number of stages before comfortably integrating technology and teaching practice (see Galanouli *et al*., 2004; Janssens-Bevernage *et al*., 2005). Beginning with awareness that ICT can be relevant to their teaching practice, teachers then actively seek methods to improve their knowledge and skills in the area through workshops and other educational opportunities, as well as exploring some applications on their own. This stage often generates frustration and discomfort, while at the same time the teachers develop coping strategies and new ideas for innovation. Following this, teachers and trainers begin to actively seek ways to use technology to enhance the learning process and some of their old practices are replaced. The data described here seem to indicate that most of the teachers surveyed are in the beginning stage (awareness) and – in some cases – moving into a stage of exploration.

4 Follow-up on impact: a look at the qualitative data

After the processing of the quantitative data compiled from the returned questionnaires, respondents were chosen for qualitative semi-structured e-mail-facilitated interviews. Interviewees were chosen in order to have a representation of different volume and frequency of use (both professionally and personally) of computer-mediated resources. Each interview was given an identifying tag (e.g. I1, I2, etc.) (see profiles in Figure 3 below).

The first round of a total of nine email interviews followed a general format: (a) the respondents were thanked for answering the questionnaires; (b) they were asked open-ended questions related to their answers. For example, if the respondents said they were involved in projects, they were asked to give a brief description of the project and to explain why and how they got involved. Likewise, if they had indicated that they did not participate in specific activities, they were asked if they could explain why not. Respondents were also asked about the degree of comfort they felt when working with new technologies and being involved in this type of project. This approach allowed for a revisiting of concepts and perceptions which emerged

Identifier	Age	Years of Teaching	Personal Use	Professional Use
Novice				
I-1	24	2	x	
I-2	24	2	x	x
I-3	24	2	x	x
I-4	25	3	x	
I-5	26	3	x	
I-6	28	1	x	x
Expert Teachers				
I-7	28	7	x	
I-8	31	10	x	x
I-9	41	20	x	

Fig. 3. Profiles of interview respondents

from the quantitative data analysis; at times this required several exchanges between the researcher and the respondent in order to clarify points.

> [I]t is important to note that online, asynchronous, in-depth interviewing, which is usually conducted via e-mail, is, unlike e-mail surveys, semistructured in nature and involves multiple e-mail exchanges between the interviewer and interviewee over an extended period of time. (Meho, 2006: 1284)

As Meho notes, the use of e-mail interviews helps reduce the cost of interviews conducted via telephone or personal interviews, as well as facilitating interviews with geographically separated subjects. Nonetheless, as was mentioned earlier in the outline of the research, e-mail interviews carry an inherent risk of a higher possibility of dropouts (Hodgson, 2004) due to limited time or access to Internet resources as well as lower commitment to the activity than may be encountered in face-to-face interview. There are other disadvantages to e-mail interviews when compared to personal interviews, for instance, the lack of non-verbal communication (gestures, looks, pauses, fronting, etc.) as well as the possibility that the respondent may prefer oral expression to written expression of their thoughts and ideas (Karchmer, 2001). On the other hand, according to Levinson (1990), e-mail interviews can provide the respondent with more time and opportunity for careful reflection and consideration of exactly what the respondent wishes to communicate, allowing for greater clarity and description in the answer.

On the whole, when discussing their experience of participating in the training project described above, the teachers indicated that they were appreciative of the opportunity to have participated in the MICall project and felt they had acquired a considerable amount of knowledge and skills related to telecollaboration. The teachers who were not currently involved in any project of this sort stated that they would feel confident and certain of themselves if they did eventually become involved in a similar project. It is relevant that several of the respondents emphasized the fact that they were working in some type of ICT project, albeit not on the same large scale as they had experienced in MICaLL nor involving other partner classes.

> Extract 1
> …I know it does not sound like much but for me, it is a small, but big step. Do you remember how much I resisted using computers in class when we first

https://doi.org/10.1017/S0958344009990085 Published online by Cambridge University Press

started? (It seems so long ago!) Now I surprise myself *(…)*. *I-8, experienced teacher, February 15 2008*.

Congruent with the data in the quantitative part of the research, several respondents to the e-mail interviews underlined the lack of time for preparation and implementation and the fact that they had too much pressure to meet everyday tasks to become involved in telecollaboration or other technology-oriented projects.

Extract 2
… not enough time to think about new ways to teach. (…) By the time you get the students in the computer room half your classtime is over! *I-3, novice teacher, January 28 2008*.

Lack of specific preparation in some areas of teaching was also mentioned as a factor for little participation in ICT projects or for integration of technology in their teaching. Novice teachers must be encouraged to base their instruction in part on the contextualized incidents going on as their lesson unfolds. This requires an ability to adapt instruction as required by classroom interactions. This may be supported by training that helps them learn to identify particular events in their classroom interactions as noteworthy. With ICT, research fieldwork into the yet unexplored barriers, such as young learners, can become a part of teachers' training.

Extract 3
…I don't know how to use what I learnt with very young children. They can't type, they don't know many words (…). *I-6, novice teacher, March 24 2008*.

Also in line with the anxiety scale of the ACCC tool, the teachers wrote about the difficulty of ensuring that the students were as engaged in the project as the teachers were. One teacher wrote of the frustration he felt with his students' lack of motivation or apparent lack of interest after having spent a considerable amount of time preparing an online activity.

Extract 4
I spent hours preparing the activities and then my pupils were not interested 'en absoluto[3]'. *I-2, novice teacher, February 11 2008*.

Another teacher wrote that she was not sure how to start a new project and that she was afraid she would not get administrative support. This same teacher mentioned that other teachers' resentments created a feeling of isolation and that within the school environment there was little cooperation between colleagues.

Extract 5
I mentioned my idea for set up partner exchange but the others did not accept it. (…) felt really bad after the meeting. *I-9, experienced teacher, April 17 2008*.

The narrative data described above runs closely parallel to data compiled by Sasseville (2004) in his article on teachers' discourse about information technology. As the author points out, teachers do not harbour deep-set negative feelings towards

[3] 'En absoluto' means 'not at all' in Spanish.

technology in the classroom, but it is seen as an individual challenge which must be met by the teacher on a personal level and the means to integrate technological change into teaching practice requires adaptation to the local environment.

> [V]ery few teachers were openly and systematically against technological advances in education or ICT integration into their craft. Their vision of ICT is more restrained, confined to the classroom setting or the general day-to-day routine of school life. ICT is generally perceived as a welcome addition to the arsenal of pedagogical tools and approaches in the classroom. Learning with technology is considered important because it is quickly becoming a common way of acquiring knowledge, but technology is always subservient to the learning goals set by the teacher. (Sasseville, 2004)

This same author has argued that "the teacher's pragmatic discourse can be more easily associated with a humanist ideology". Indubitably, humanism in the classroom would concentrate upon the development of the child's self-concept (Moskowitz, 1978). It can be put forth that the predominant discourse running through the e-mail interviews indicated a concern for quality of teaching and a desire to ensure a caring, supportive learning environment for the students in which they can safely develop their self-esteem. At the same time, they are trying to balance the everyday pressures of teaching and administration. This is not always easy to achieve in "an increasingly invasive technology-based economic complex" (Bigum, 1997 quoted in Sasseville, 2004).

Research has shown that ICT can have a positive influence on teaching practice and that new technology may be especially useful as support for socio-constructivist, student-centred approaches that require exchanging and processing of information, promote abstract thinking, and which are used to focus on problem-solving as part of the learning processes (see Baskin, 2001; Fujike, 2004; Leask & Pachler, 2001). The data compiled through the e-mail interviews indicate that, despite the projects and teacher training programmes focused on ICT in teaching and despite the respondents' concern for quality in education, there still appears to be a gap between awareness of the need for and realization of effective integration of technology in teaching practice that effectively brings about constructivist paradigms in their teaching (see also Haddad, 2003; Robinson & Latchem, 2003; Sime & Priestley, 2005; Almås & Krumsvik, 2008).

5 Discussion

These results may be eerily familiar to many teacher trainers. Perhaps the issue must be reframed and the question should shift from: what does this mean for teachers? to what does this mean for teacher trainers? Do differences in the structure and design of the training course focusing on technology integration result in differences in the self-efficacy beliefs toward technology integration? Other studies and literature on the outcome of teacher training and ICT use have indicated similar concerns. Egbert *et al*. (2002) have proposed that the peer collaboration in situated learning can have a significant impact on teacher learning; however it might be argued that teacher training might need to find a way to extend peer learning into peer collaboration, once the teachers are actually working. This supposition is supported by the

comment by I-9 (an experienced teacher) who wrote about her disappointment in her colleagues' lack of support for her initiatives (extract 5).

According to Higgins and Kassen (1997), it is important for future teachers to learn with technology before teaching with it so that they are exposed to technology from the student's perspective and can more easily assess the challenges it may have for a learner as well as the benefits. Through this situated learning, future teachers will be better positioned to integrate technology into their teaching (Lam, 2000; Arnold & Ducate, 2006). However, the results found in this research indicate that, despite the positive benefits of peer collaboration in situated learning, this may not be enough. Exactly how the use of technology is integrated into a training course, task types, amount of time involved, etc are significant to the outcome and may explain findings that indicate short-term rather than long-term effects.

The results from this study also showed that teachers were not likely to participate in continued education that focused specifically on the integration of ICT in teaching approaches. This does seem to beg the question of whether there were any opportunities for enrolling in courses focusing on integrating, adapting or innovating teaching approaches through/with new technologies. Unfortunately information on these types of courses on offer by any of the official education authorities (local teacher training agencies, education faculties, and the Education department) during this period could not be found.

In some countries, education authorities have apparently begun to 'tap into' teachers' personal use and familiarity with technology in order to provide support for educators to make links between their own and students' use of ICT in such a way that it helps support the learning process (see Medway Council (UK) ICT Across the Curriculum). On the whole, however, it seems that this nexus between personal and institutional use of technology has not been comfortably bridged by students or teachers. A recent study carried out on behalf of the Joint Information Systems Committee (JISC) demonstrated that students who make wide use of social networking do not easily see how this type of interaction can (or should) be used in learning (Hutchings, 2008). While a percentage of respondents in this cited study felt that it was a good idea for teachers to use social networking sites for teaching (38%), networks that were put into place by the teacher were perceived as 'overtly formal and out of place' (Hutchings, 2008: 2). It seems that educators and learners are unaware of the inextricable link between the use of ICT in their personal and professional lives.

This research found that although use and familiarity with ICT in work and personal life have increased in recent years, very little has changed in teaching practices. In another study, it was found that ''the way teachers and students use technology in their personal lives was more diverse than their experience in the classroom. Classroom use tended to involve an introduction to computer packages rather than learning the skills required for using ICT in everyday life'' (Snyder *et al.*, 2005: 1). Along similar lines, Smerdon *et al.* (2000) found that most teachers learned to use computers outside of coursework. As these authors pointed out, learning about ICT outside of teacher training does help prepare teachers for eventual use of technologies in their teaching but it can be argued that this does not necessarily prepare them to do so effectively, competently and comfortably.

Given the number of years and the intensity of the ICT training project the novice teachers had gone through during their initial teacher training within the MICaLL framework, the number of graduates currently involved in some type of network-based activity or project was notably low. And while the general attitude towards the integration of ICT in their teaching practice was positive, the anxiety scale for these teachers was also high and the enjoyment scale was relatively low. To put it bluntly, there appears to be an enormous gap between the 'virtual reality' of teacher training with ICT and the 'too-real' reality of first years of teaching. The results inevitably beg closer reflection on teacher training approaches taken thus far.

It seems almost ironic that reflective practice has long been a fundamental element in teacher training *for the teacher trainees*. Trainees are frequently encouraged to critically examine the values, assumptions, theories and strategies that underlie their behaviour and their decisions in the classroom (Schon, 1988). However, teacher educators are less likely to apply the same principles and strategies for themselves (Dooly, 2009). According to Roth (1989) the basic elements of reflective practice consist of:

- Being open-minded about what, why and how we do things
- Being aware of what, why and how we do things
- Being critical and asking questions about what, why and how we do things
- Being open to and creating a variety of choices and possibilities
- Comparing and contrasting results
- Seeking to understand the underlying premises and rationales of what we observe
- Actively seeking different perspectives of what we do and why
- Asking "what if …?"
- Requesting feedback and seeking other opinions
- Analyzing, synthesizing and testing different premises
- Identifying and resolving problems.

If the basic principles of reflective practice listed above are applied to the teacher training outlined here, some preliminary conclusions emerge. Arguably, in the teacher training project described in this article, there was too much focus on the numerous possibilities of ICT and not enough emphasis on *efficient* approaches for innovating with ICT, despite the attempt to create "situated learning" for the trainees. This would be equally applicable to the lack of discussion on how to integrate ICT into already existing teaching environments. As teacher trainees, the opportunities for implementing ICT projects were provided, but admittedly, these were 'sheltered' situations where considerable support for the design and implementation of the projects was provided. Also, there was more time dedicated to theory rather than practice. Discussion of what, why and how is not the same as *doing*.

Novice (or soon to be) teachers are worried about how they will deal with their students when they are on their own in their classroom. These worries and doubts need to be acknowledged and given sufficient time and attention. As the questionnaires and e-mail interviews indicated, new (and not so new) teachers may be willing and keen to bring in change but everyday pressures and anxiety concerning issues such as class management in unfamiliar circumstances can be daunting.

These fears need to be identified and acknowledged so that constructive problem-solving can be fore-grounded while the trainees are still within a supportive environment and before they must face such situations alone.

It is also important to recognize that teachers are often working in less than ideal environments. In a perfect world, every student would have a computer to use and the computers would all have high-speed, broadband Internet access. The pupils would not have to move from their regular classroom to a computer lab to use the computers (nor would the use of the computers have to be carefully negotiated with the timetable of the rest of the classes). By admitting that most teacher trainees will not be entering into superbly technologically-oriented schools, the responsibility of helping them find creative alternatives to the 'real' situations they will find themselves in falls upon the teacher educators. At the same time, being open-minded and accepting the 'small steps' taken by teachers to begin integrating technology into their practice will possibly help encourage more such endeavours. Focusing too much on the vast possibilities of network-based learning may seem a bit daunting to novice teachers, whereas beginning with more 'receptive' use of computers may seem more 'do-able'. This should not be taken to mean that teacher educators should refrain from pushing for more communicative activities, but more time, long-term investment and continual monitoring may be necessary.

Finally, trainers must look for ways to align the personal and professional interests of their trainees. The data from this research showed a small, but growing interest in online social networks in teachers' personal lives. Introducing future *and* practising teachers to existing online communities of practice (CoP) focused on teaching can help them find like-minded professionals who can share and support them in the process of innovating their teaching practice (the notion of CoP is understood here as a part of a situated approach to learning as described by Lave & Wenger, 1991; Wenger, 1998).

> Recent educational reforms and research on teacher professional development (TPD) recognizes that if teachers are going to improve their practice, they need to have access to ongoing, quality professional development that is situated in their everyday instructional environment that provides opportunities to communicate, collaborate, and reflect on their teaching. (Barnett, 2002: 1)

Moreover, the sense of joint enterprize and mutual engagement which are a basic part of CoPs can motivate teachers and students to engage in activities more readily than if they are facing similar situations alone. It may also help extend the benefits of collaborative learning that takes place during Initial Teacher Training.

It may seem to be a long and winding road ahead of us, but it is important to bear in mind that public education, as we know it today, is a relatively new phenomenon in human history. That we have come as far as we have speaks volumes about the commitment of teachers around the world and also bodes well for the future of teaching. As one teacher responded in an e-mail interview:

> It is not so easy to do like I imagined when I was studying to become a teacher. I was sure I was going to revolutionize everyone and everything! Now sometimes I'm just happy to make it through the day. But I am trying to make some

changes to my teaching. I want to use what I learnt before. I remember how much it liked me to make exchanges with other teacher students in Vienna. I am sure that my own students will like it too. It's the future and the only way to go, isn't it? *I-2, novice teacher, 11 April 2008*.

References

Abbitt, J. T. and Klett, M. D. (2007) Identifying influences on attitudes and self-efficacy beliefs towards technology integration among pre-service educators. *Electronic Journal for the Integration of Technology in Education*, **6**: 28–42. http://ejite.isu.edu/CurrentIssue.html

Almås, A. G. and Krumsvik, R. (2008) Teaching in technology-rich classrooms: is there a gap between teachers' intentions and ICT practices? *Research in Comparative and International Education*, **3**(2): 103–121.

Arnold, N. and Ducate, L. (2006) Future foreign language teachers' social and cognitive collaboration in an online environment. *Language Learning & Technology*, **10**(1): 42–66. http://llt.msu.edu/vol10num1/pdf/arnoldducate.pdf

Arnold, N., Ducate, L. and Lomicka, L. (2007) Virtual communities of practice in teacher education. In: Kassen, M. A., Lavine, R. Z. Murphy-Judy, K. and Peters, M. (eds.) *Preparing and Developing Technology-proficient L2 Teachers*. CALICO Monograph Series Vol. 6. Texas, USA, 103-132.

Barnett, M. (2002) *Issues and Trends Concerning Electronic Networking Technologies for Teacher Professional Development: A Critical Review of the Literature*. Paper presented at the annual meeting of American Educational Research Association, New Orleans, 2nd April 2002.

Baskin, C. (2001) The Titanic, Volkswagens and collaborative group work. Remaking old favourites with new learning technologies. *Australian Journal of Educational Technology*, **17**(3): 265–278.

BECTA (2008) *Web 2.0 Technologies for Learning at KS3 and KS4: Learners' Use of Web 2.0 Technologies in and out of School*. London: BECTA.

Bigum, C. (1997) Teachers and computers: In control or being controlled? *Australian Journal of Education*, **41**(3): 247–261.

Bonk, C., Hansen, E., Grabner-Hagen, M., Lazar, S. and Mirabelli, C. (1996) Time to 'connect': Synchronous and asynchronous case-based dialogue among pre-service teachers. In: Liao, T. (ed.) *Advanced Educational Technology: Research Issues and Future Potential*. Berlin: Springer Verlag, 289–314.

Burniske, R. W. and Monke, L. (2001) *Breaking Down the Digital Walls: Learning to Teach in a Post-Modem World*. Albany, NY: SUNY Press.

Carlson, S. and Gadio, C. T. (2002) Teacher professional development in the use of technology. In: Haddad, W.D. and Draxler, A. (eds.) *Technologies for Education: Potential, Parameters, and Prospects*. Paris and Washington, D.C.: UNESCO and AED.

Cuban, L., Kirkpatrick, H. and Peck, C. (2001) High access and low use of technologies in high school classrooms: explaining an apparent paradox. *American Educational Research Journal*, **38**(4): 813–834.

Dooly, M. (2008) Understanding the many steps for effective collaborative language projects. *Language Learning Journal*, **36**(1): 65–79.

Dooly, M. (2009) *Doing Diversity. Teachers' Construction of their Classroom Reality. Vol. 82 Linguistic Insights*. Bern: Peter Lang.

Egbert, J., Paulus, T. M. and Nakamichi, Y. (2002) The impact of call instruction on classroom computer use: A foundation for rethinking technology in teacher education. *Language Learning & Technology*, **6**(3): 108–126. http://llt.msu.edu/vol6num3/egbert/

Egbert, J. (2006) Learning in context: Situating language teacher learning in CALL. In: Levy, M. and Hubbard, P. (eds.) *Teacher Education in CALL*. Philadelphia, PA: John Benjamins, 167–181.

Endacott, R. (2005) Clinical research 4: qualitative data collection and analysis. *Intensive and Critical Care Nursing*, **21**: 123–127.

Fujike, T. (2004) Collaborative interaction in EFL web-based debates. How do learners develop socially constructed knowledge? *CALL-EJ Online*, **5**(2). http://www.tell.is.ritsumei.ac.jp/callejonline/journal/5-2/fujiike.html

Galanouli, D., Murphy, C. and Gardner, J. (2004) Teachers' perceptions of the effectiveness of ICT-competence training. *Computers and Education*, **43**(1–2): 63–79.

Greenhow, C. (2007) What teacher education needs to know about Web 2.0: Preparing new teachers in the 21st century. In: Crawford, C. *et al*. (eds.) *Proceedings of Society for Information Technology and Teacher Education International Conference 2007*. Chesapeake, VA: AACE, 1989–1992.

Haddad, W. D. (2003) Is instructional technology a must for learning? *TechKnowLogia.org*. http://www.techknowlogia.org/TKL_active_pages2/CurrentArticles/main.asp?IssueNumber=19andFileType=HTMLandArticleID=455

Hampel, R. and Hauck, M. (2004) Towards an effective use of audio conferencing in distance language courses. *Language Learning and Technology*, **8**(1): 66–82.

Higgins, C. J. and Kassen, M. (1997) Meeting the technology challenge: Introducing teachers to language-learning technology. In: Bush, M. D. and Terry, R. M. (eds.) *Technology-Enhanced Language Learning*. Lincolnwood: National Textbook Company, 263–285.

Hodgson, S. (2004) Cutting through the silence: a sociological construction of self-injury. *Sociological Inquiry*, **74**(2): 162–179.

Hutchings, C. (2008) Great Expectations of ICT. Findings from second phase of research, briefing paper. http://www.jisc.ac.uk/publications/publications/greatexpectationsbp.aspx

Janssens-Bevernage, A., Cornille, B. and Mwaniki, N. (2005) Integrating ICT in teacher training: Reflections on practice and policy implications – a case study of the learning resource centre at the Kenya technical teachers college. In: Etta, F. and Elder, L. (eds.) *At the Crossroads. ICT Policymaking in East Africa*. Nairobi: East African Educational Publishers, 153–165.

Jung, I. (2005) ICT-pedagogy integration in teacher training: application cases worldwide. *Educational Technology and Society*, **8**(2): 94–101.

Karchmer, R. A. (2001) The journey ahead: thirteen teachers report how the Internet influences literacy and literacy instruction in their K–12 classrooms. *Reading Research Quarterly*, **36**(4): 442–466.

Lam, Y. (2000) Technophilia v. technophobia: A preliminary look at why second language teachers do or do not use technology in their classrooms. *Canadian Modern Language Review*, **56**: 389–420.

Lave, J. C. and Wenger, E. (1991) *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

Leask, M. and Pachler, N. (2001) *Learning to Teach Using ICT in the Secondary School*. London: Routledge Falmer.

Levinson, P. (1990) Computer conferencing in the context of the evolution of media. In: Harasim, L.M. (ed.) *Online Education: Perspectives on a New Environment*. NY: Praeger, 3–14.

Medway Council ICT across the curriculum ICTAC. http://www.medway.gov.uk/index/learning/schoolinfo/38557/37417/ictinschools/39273.htm

Meho, L. I. (2006) E-mail interviewing in qualitative research: a methodological discussion. *Journal of the American Society for Information Science and Technology*, **57**(10): 1284–1295.

Meskill, C., Mossop, J., DiAngelo, S. and Pasquale, R. K. (2002) Expert and novice teacher talking technology: Precepts, concepts and misconcepts. *Language Learning & Technology*, **6**(3): 46–57. http://llt.msu.edu/vol6num3/pdf/meskill.pdf

Moskowitz, G. (1978) *Caring and Sharing in the Foreign Language Class: A Sourcebook on Humanistic Techniques*. Massachusetts: Newbury House.

Newby, M. and Fisher, D. L. (1996), *The Computer Laboratory Environment Inventory*. Presented at the Annual Conference of the Higher Education and Research Development Society of Australia (HERDSA), Perth, Western Australia.

Perraton, H., Robinson, B. and Creed, C. (2001) *Teacher Education Through Distance Learning: Technology, Curriculum, Evaluation, Cost*. Paris: UNESCO.

Robinson, B. and Latchem, C. (2003) Teacher education: challenges and change. In: Robinson, B. and Latchem, C. (eds.) *Teacher Education Through Open and Distance Learning*. London: Routledge Falmer, 1–27.

Roth, R. A. (1989) Preparing the reflective practitioner: transforming the apprentice through the dialectic. *Journal of Teacher Education*, **40**: 31–35.

Salaberry, M. R. (2001) The use of technology for second language learning and teaching: A retrospective. *Modern Language Journal*, **85**(1): 39–56.

Sasseville, B. (2004) Integrating information and communication technology in the classroom: a comparative discourse analysis. *Canadian Journal of Learning and Technology*, **30**(2). http://www.cjlt.ca/content/vol30.2/cjlt30-2_art-1.html

Schon, D. (1988) *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass.

Sime, D. and Priestley, M. (2005) Student teachers' first reflections on information and communications technology and classroom learning: implications for initial teacher education. *Journal of Computer Assisted Learning*, **21**(2): 130–142.

Smerdon, B., Cronen, S., Lanahan, L., Anderson, J., Iannotti, N. and Angeles, J. (2000) *Teachers' tools for the 21st Century: A Report on Teachers' Use of Technology*. Washington, DC: National Center for Education Statistics.

Snyder, I., Jones, A. and Lo Bianco, J. (2005) *Using Information and Communication Technologies in Adult Literacy Education: New Practices, New Challenges. Research Overview*. Adelaide: National Centre for Vocational Education Research (NCVER).

Wenger, E. (1998) *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.