ONLINE LEARNING COMMUNITIES FOR SCHOOL TEACHERS' CONTINUOUS PROFESSIONAL DEVELOPMENT

The cognitive, social and teaching aspects of an eTwinning Learning Event

Brian Holmes, BSc(Hons), MBA, MIET, CEng

August, 2012.

This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

Department of Educational Research,
Lancaster University, UK.

This thesis was completed as part of the Doctoral Programme in e-Research & Technology Enhanced Learning.

This thesis results entirely from my own work and has not been offered previously for any other degree or diploma.

Signature .....

Brian Holmes, BSc(Hons), MBA, MIET, CEng
Online Learning Communities for School Teachers' Continuous Professional Development
The cognitive, social and teaching aspects of an eTwinning Learning Event
Doctor of Philosophy, August, 2012

Abstract

Whereas a reasonable body of research now exists on the use of networked learning and learning communities in higher education, less is known about their use in other sectors of education such as professional development. This research focuses on an example of an online learning community used for school teachers' continuous professional development (CPD) – in an eTwinning Learning Event (LE). It looks at how the online community supports the development of school teachers' competence and practice, at how social aspects contribute to the discourse and at the impact of moderation. Action research is used to follow and influence the development of the LE entitled 'Exploiting Web 2.0: eTwinning and Collaboration'.

An analysis of the first LE, using the Community of Inquiry (CoI) framework (Garrison et al., 2000) as a theoretical lens, led to changes being applied in the second LE to reinforce the cognitive, teaching and social presence. The event was lengthened to provide an opportunity for participants to apply what they were learning in the LE to their teaching practice and a final activity was added to support reflection amongst peers. Tutor moderation was reinforced at key points and informal social interaction was encouraged through the addition of a virtual staff room. Data were collected via a participant questionnaire, interviews and the coding of the messages in the discussion forums. The subsequent analysis suggests that the applied changes had a positive impact on cognitive development, social interaction and the orchestration of learning. Cognitive presence was reinforced with evidence of critical thinking emerging in the participants' discourse. Teaching presence, initially provided by the tutors, gradually emerged from the participants as they self-organised the collaboration and offered their peers mutual support. Collaboration was seen as contributing to the learning, with informal knowledge sharing and participants perceiving a sense of community. However, the community was ephemeral, lasting only for as long as it served the purpose of learning. The results suggest an emerging model for future eTwinning LEs and their online moderation by a tutor.

Contents

Acknowledgements

I would like to express my sincere thanks to my supervisor, Julie-Ann Sime, for all her support in achieving this thesis; Tiina Sarisalmi for being such an inspiration during the Learning Events; Anne Gilleran, Riina Vuorikari, Donatella Nucci, Santi Scimeca, Marc Durando and all the other colleagues at EUN who collaborated with me and helped to make this happen; my examiners, Marilyn Leask, University of Bedfordshire, and Don Passey, University of Lancaster, for their valuable feedback and suggestions; and last but not least, my husband Bryan Hoffmann for his patience and moral support over the last four years.

* http://creativecommons.org/licenses/by-nc-nd/3.0/deed.en_GB

Publications derived from work on the Doctoral Programme

The results of this research were presented in the following papers and events:

Online Learning Communities for Teachers' Continuous Professional Development: case study of an eTwinning Learning Event
(Holmes and Sime, 2012)
Networked Learning conference, Maastricht, April 2012

eTwinning Learning Events: Using Online Learning Communities for Teachers' Continuous Professional Development
Online Educa, Berlin, December 2011 and December 2010

Online learning communities
British Educational Research Association (BERA) annual conference, London, September 2011

eLearning 2.0
eTwinning annual conference, Budapest, April 2011

Technology-Enhanced Learning: A one-day conference for teachers
CSALT, University of Lancaster, October 2010

List of abbreviations

CAQDAS	Computer Assisted Qualitative Data Analysis Software
CBT	Computer Based Training
CMC	Computer-mediated communication
CoI	Community of Inquiry
CoP	Community of Practice
CPD	Continuous professional development
CSS	Central Support Service of eTwinning
EUN	European Schoolnet, the eTwinning CSS and organisers of the LE
HE	Higher education
LE	An eTwinning Learning Event
NSS	National Support Service of eTwinning
PLC	Professional Learning Community
TEL	Technology enhanced learning
Web 2.0	Social networking technologies

List of Figures and Tables

Chapter 1 Introduction and Background

This chapter sets the context for the research, describing the social revolution taking place in the use of technology, affording collaboration and learning in online networks and communities, and the potential this offers for teachers' professional development. It explains the purpose of the research as an exploration of online learning communities with a focus on purposeful learning, the social aspects and the role of the educator in the process. It discusses the domain in which the research took place – the EU's eTwinning initiative for school teacher cooperation and continuous professional development – and confirms the research questions as being focused on the interrelationship between competence development, social issues and teaching aspects. It introduces the Community of Inquiry (CoI) framework as the theoretical lens for the analysis and discusses how action research was carried out in an eTwinning Learning Event (LE) as a specific case. The intended audience for the research is confirmed as being educators, teacher trainers, policymakers and researchers alike and an overview is presented of the remainder of the thesis to guide the reader.

1.1 Wider context for the research

The use of social computing has exploded in the last decade as the technological advances offered by social networking technologies (Web 2.0) have been accompanied by a social revolution in the way information is shared, knowledge is generated and innovation takes place. 'For the first time in history, the human mind is a direct productive force, not just a decisive element of the production system' (Castells, 2000, p.31). Initially the reserve of innovators and early adopters, patterns of use are now changing. 'New user groups are emerging that are not made up of the typical ICT early adopters: more and more women and older people are starting to use social computing applications' (Pascu, 2008, p.ix). These groups are using social computing to collaborate online, to participate in new networks and to establish relationships in online communities. Whereas learning is usually not an explicit motive for the participants, research suggests that it does often take place as online communities offer novel ways of learning, in different social contexts and with flexible learning trajectories (Ala-Mutka, 2010).

Online communities are being used in non-formal and informal ways to support organisational knowledge sharing and the development of professional practice in Communities of Practice (Wenger, 1999a; Lai et al., 2006). Similarly in formal

education, online communities are increasingly being employed to augment collaboration between students, and between students and tutors, in networked learning (McConnell, 2006; Palloff and Pratt, 2007). Research suggests that such networked learning helps to create autonomous learners, better suited for the challenges of a modern society (Goodyear, 2002) and with the key competences needed for lifelong learning (Ala-Mutka, 2010).

Social computing has revolutionised the way information is created, used and reused by users learning informally in social networks (Pascu, 2008), however change in formal education has been much slower (EU, 2008). Moreover, formal learning is a domain where if change is to be in the best interests of the learners, it needs to be driven by pedagogical innovation and led by educators (Laurillard, 2008). Yet studies have suggested that teachers are sometimes reluctant to use technology in the classroom (see for example Ertmer, 2005) and are consequently perceived as a barrier to innovation. Policymakers have reacted by proposing 'measures to encourage teachers to make real use of digital technology in their lessons' (EU, 2001, p.3) and by advocating more relevant teacher training (EU, 2003). Change has been positive, albeit slow, with teachers gradually becoming more positive about the use of ICT in the classroom (EU, 2008; EUN, 2009) resulting in 'a more mature and also more pervasive use of ICT for learning' (EU, 2010, p.4). However, studies have also shown that positive change happens when educators believe in the pedagogical value of using technology (Ertmer, 2005; Ottenbreit-Leftwich et al., 2010). Hence, rather than providing more external stimuli, educators need to be offered more opportunity to experience and see the value of technology for themselves, through professional development that provides opportunity for inquiry learning and reflection in action (Boyle et al., 2004). Then, far from being barriers to change, teachers will become advocators of it (Guskey, 2002).

In the area of teachers' professional development, learning communities are seen as offering valuable opportunities for authentic and personalised learning (Duncan-Howell, 2010), informal exchange of good practice and peer learning (Avalos, 2011). Moreover, rather than separating the formal knowledge and theory of teaching from the practical knowledge gained from applying ideas in action, learning communities can help teachers to take a more systemic view through critical inquiry with peers (Cochran-Smith and Lytle, 1999; Vescio et al., 2008).

In this context of online communities being used for professional development and in particular for teacher training, the next section discusses the purpose of the research, identifying a potential gap in the current research.

1.2 Research purpose

Whereas a reasonable body of research now exists on the use of networked learning and online communities in higher education, especially in postgraduate studies, much less is known about their use in other sectors of education, such as professional education and training (Goodyear et al., 2004; Hodgson and Watland, 2004; Kirschner and Lai, 2007).

Similarly, whereas research suggests that teachers benefit from working and learning together (Cochran-Smith and Lytle, 1999; Boyle et al., 2004) and from participating in professional learning communities (Grossman et al., 2000; Vescio et al., 2008), less is known about teachers collaborating online in networks and learning communities (Day and Sachs, 2004; Lockhorst et al., 2010), about the benefits of teachers reflecting on their practice (Akbari, 2007) and about the impact of communities on their professional development (Lai et al., 2006; Hramiak, 2010).

The research presented here is at the intersection of these two areas for further investigation: online communities and teachers' continuous professional development (CPD). It focuses specifically on communities aimed at learning – online learning communities – rather than other types of community such as Communities of Practice (CoP) or Communities of Interest. Whereas these online communities all contribute to teachers' CPD and have many characteristics in common, the focus of online learning communities on individual learning in the context of a group has important consequences for the nature of the community and learner orchestration.

Eraut (2002, cited in Martin, 2005) posits that a learning community supports transformative learning through innovation and a culture of inclusion, whereas a CoP is mainly concerned with the reproduction of knowledge transferred from experts to newcomers. McConnell (2006, p.21) argues that a learning community is specifically focused on purposeful learning through a 'collective effort of understanding', whereas a CoP is more concerned with shared professional practice. As such, a learning community is likely to involve an educator whose role it is to design and support the educational experience. This may in practice be a teacher, trainer, tutor, lecturer, facilitator or moderator depending on the context. However, research does suggest that this role can have a significant impact on the success of the learning undertaken within the community (Pedler, 1981; Salmon, 2000; Anderson et al., 2001; Martin, 2005; McConnell, 2006; Laurillard, 2008).

In order to avoid the criticism of Grossman et al. (2000, p.6) that the term *community* is simply 'an obligatory appendage to every educational innovation' or of McConnell (2006, p.21) that it is 'currently being applied in too many educational contexts with little apparent understanding of what it might, or should, mean', the research aims to understand the implications of the term as a social concept and examine its value for the shared endeavour of learning. This is no easy feat as even in the world of anthropology and sociology, from where the concept originates, there is no single, coherent and consistent definition:

> 'Community' is one of those words – like 'culture', 'myth', 'ritual', 'symbol' – bandied around in ordinary, everyday speech, apparently readily intelligible to speaker and listener, which, when imported into the discourse of social science, however, causes immense difficulty. (Cohen, 1985, p.11)

As a starting point, from an educational perspective, the definition of community offered by Barab et al. (2003) may be considered:

> … a persistent, sustained social network of individuals who share and develop an overlapping knowledge base, set of beliefs, values, history, and experiences focused on a common practice and/or mutual enterprise. (Barab et al., 2003, p.55)

This definition suggests that a community is more than simply a group of participants with a common interest. Rather a community involves social interdependence, sustained by relationships and strong emotional ties developed over time. It involves shared experience and knowledge building with a clear focus on practice and on collaboration. It offers sufficient shared interest and value that the participants are motivated to interact and return (Leask and Younie, 1999).

In conclusion, a potential gap in the research has been defined and the purpose of the research confirmed as an exploration of online learning communities for school teachers' professional development, taking into account the focus on purposeful learning, the importance of social aspects and the role of the educator in the process.

The wider implications of fostering a community, of developing it online and of using it in support of learning are further discussed in the literature review of Chapter 2. In the following section, the domain in which the research is conducted and the specific case investigated is discussed.

1.3 Research domain

1.3.1 The eTwinning Initiative

The research is situated in the context of the European Commission's eTwinning initiative, funded under the Comenius sub-programme of the Lifelong Learning Programme (LLP)[1]. It started in 2004 with the objective of encouraging school teachers to work together informally across Europe in joint pedagogical projects using the internet (Gilleran, 2007). So far, there have been approximately 94 000 schools and 166 000 users (mainly teachers) registered in eTwinning, with 23 000 registered projects[2]. Teachers involved in eTwinning teach a range of subjects at primary and secondary school level, in both general and vocational education, to pupils ranging from 4 to 19 years old.

The opportunity for me to use eTwinning as the domain for my research arose from my involvement in the initiative in my daily work at the European Commission. I was aware of the steps being taken to make greater use of social computing to foster a community (see below) and I saw the social constructivist approach used for school teachers' development as being in line with my philosophical stance on learning (as outlined section 3.4.2). Social constructivism is discussed further in section 2.1.2.

There is no funding provided for the participant school teachers, only support and services. This keeps the administration simple and is one of the factors for its success. It also reduces the risk of a potential conflict of interest that I might have working with the school teachers, had they been receiving funds from the organisation for which I work (see the discussion on ethics in section 3.7).

Within the various countries, support is offered in the relevant languages by the National Support Service (NSS); for example, in the UK by the British Council[3]. At the European level, support is offered by the Central Support Service (CSS). The CSS maintains the multi-lingual eTwinning portal (see Figure 1-1), provides a helpdesk for school teachers and periodically organises events, both online and face-to-face. The CSS is maintained under a public procurement contract by the European Schoolnet (EUN) which, in itself, is a thriving community for school teachers involving the Ministries of Education from across Europe (Leask and Younie, 2001b).

---

[1] http://eacea.ec.europa.eu/llp/comenius/comenius_etwinning_en.php

[2] As of 06 May 2012: http://www.etwinning.net/en/pub/news/press_corner/statistics.cfm

[3] http://www.britishcouncil.org/etwinning

Figure 1-1 Homepage of the eTwinning portal (http://www.etwinning.net)

In 2008, the strategic decision was taken to place greater emphasis on the continuous professional development of school teachers and the exchange of good practice through online communities supported by social software and Web 2.0 tools. This decision was based on the observed pattern of the participants over the first three years of the action and on the realisation that eTwinning is effectively a thriving community of schools and teachers (eTwinning, 2009). Two new initiatives were launched as a result of this strategy:

eTwinning Groups	These are groups of like-minded school teachers who form an online Community of Practice (CoP) within the eTwinning environment, to share ideas, exchange experience and work together on common artefacts on a long-term basis. They are informal, self-organising and aimed primarily at improving teaching practice.
Learning Events	Similar to eTwinning Groups, these are more structured in nature, are focused on individual learning and last for a shorter, fixed duration. They are organised and facilitated by a domain expert who is usually a volunteer eTwinning teacher.

In April 2010, the opportunity arose for me to be involved in a Learning Event (LE). At this stage of my research I was considering both the eTwinning groups and the LEs as possible online professional development activities to investigate further. Both have characteristics which are of interest for research into online communities. As with most CoP, however, learning is not the explicit intention in the eTwinning groups, though it is often a by-product (Wenger, 1999a), whereas with the LEs the focus is clearly on individual learning in a social context, guided by a domain expert. Therefore, it seemed more appropriate to focus on the latter for my research into learning communities and this is discussed in the next section.

In an eTwinning LE, school teachers have the opportunity to learn about a particular topic through non-formal learning with peers. The LE offers a social context in which learning takes place through exploration, learning-by-doing and reflection with peers. The tutor leading the group is often a fellow school teacher who is an expert in the particular subject of the LE, for example, mind mapping. The tutor's role is not to teach but rather to inspire and guide the group through self-learning. The tutor provides relevant content and structure to stimulate learning, creates opportunity for discussion and is on hand should the group flounder. There is no participation fee for the teachers and most of them undertake the LE in addition to their everyday teaching duties. Although this requires commitment, it has the advantage that the professional development is situated in the context of everyday teaching practice. At the end of the LE, the teachers receive a certificate of completion which is accepted in many countries for the purposes of recognising professional development.

1.3.2 The Learning Event (LE) on Web 2.0

The specific LE used for the research is entitled ‘Exploiting Web 2.0: eTwinning and collaboration’ and it ran for the first time in April 2010 and for the second in November 2010. The following sections describe the first LE. The second one is described in Chapter 5, in terms of the changes made from the first.

Objectives, participants and timing

The objectives of the first LE were ‘to explore and exploit different Web 2.0 tools and applications and evaluate their applicability in eTwinning projects with a special focus on collaboration’ (Sarisalmi, 2010a, p.1). The number of participants was limited to 200 and they were asked to provide a few personal details about themselves, such as

their age, gender, country, the subjects they taught and the age group of their pupils[4]. However, there were no restrictions placed on who could participate; it was open to any teacher registered in eTwinning with or without previous experience of Web 2.0 tools.

The LE ran from 12-22 April 2010 with 11 consecutive days of activities. Access to the LE was restricted by password to those who had been accepted for the event.

Role of the tutor

The domain expert is responsible for designing, organising and managing the LE; Tiina, a teacher from Finland, is effectively the tutor. She designed the LE, structured the online environment, provided the online content and supported the participants during the learning. It is very much up to the tutor to decide on the level of instruction, guidance and feedback that they offer. Tiina answered many questions, often of a technical nature, but otherwise she intervened as little as possible in the discussions, preferring to offer the space to the participants to express themselves, to be creative and to learn via discovery. She was also responsible for evaluating the event and writing a report at the end for the LE organisers (Sarisalmi, 2010a).

Design, pedagogical approach and organisation

In my view, Tiina adopted a social constructivist approach to tutoring by encouraging learning through collective problem solving in a socio-cultural context (social constructivism is discussed further in section 2.1.2). She described the event as being 'based on the idea of an active learner, doing instead of reading, working collaboratively in a group instead of alone, sharing instead of owning' (Sarisalmi, 2010a, p.1). She designed the activities to resemble a typical project with its various phases, creating seven different themes with seven different sets of tools, in ten activities, as summarised on the welcome page illustrated in Figure 1-2.

Figure 1-2 and Figure 1-3 illustrate the layout of a typical page in the LE. Note that the tabs used to access the pages for the various themes, at the top of the screen, were only made available to participants gradually according to the timing of the activities. This was done in order to guide the participants through the themes and activities, to help focus their attention and to avoid overloading them at the start.

[4] Throughout the document the term pupil is used to refer to children being taught in schools, though some teachers also use the term student

The top of Figure 1-2 illustrates that in addition to the pages for the individual themes, there are tabs to provide access to a discussion *Forum* and to information regarding the *Members* of the LE. On the latter page, the participants can see images and a link to profile pages for each teacher registered in the LE, plus the tutor and myself.

The participants were asked to describe themselves on their profile page and to add an image, as part of the first activity. Some decided to include a recent picture of their face, whilst others preferred to use a picture of an artefact[5]. The profile page also indicates who is requesting to be a participant's friend and their recent activity in the forum. Figure 1-4 illustrates a typical profile page, in this case mine.

In the first (welcome) activity, the participants were requested to introduce themselves in the discussion forum and to reply to the introductions of their peers. The discussion forum is a typical asynchronous, text based area divided into sections (called categories and sub-categories) where participants can post a message in an existing discussion thread, reply to a previous message or create a new thread, as illustrated by Figure 1-5. Here you will see that there is a discussion category for most themes in the LE, with sub-categories to structure the dialogue in groups. Furthermore, in order to encourage interaction, the tutor places tools to the right of the screen (as in Figure 1-5) for the participants to express their views via a survey or vote relating to the recent activities.

In the following section, the underlying framework used as a theoretical lens to guide the analysis is introduced.

[5] The actual photos have also been redacted in the figures in order to preserve anonymity

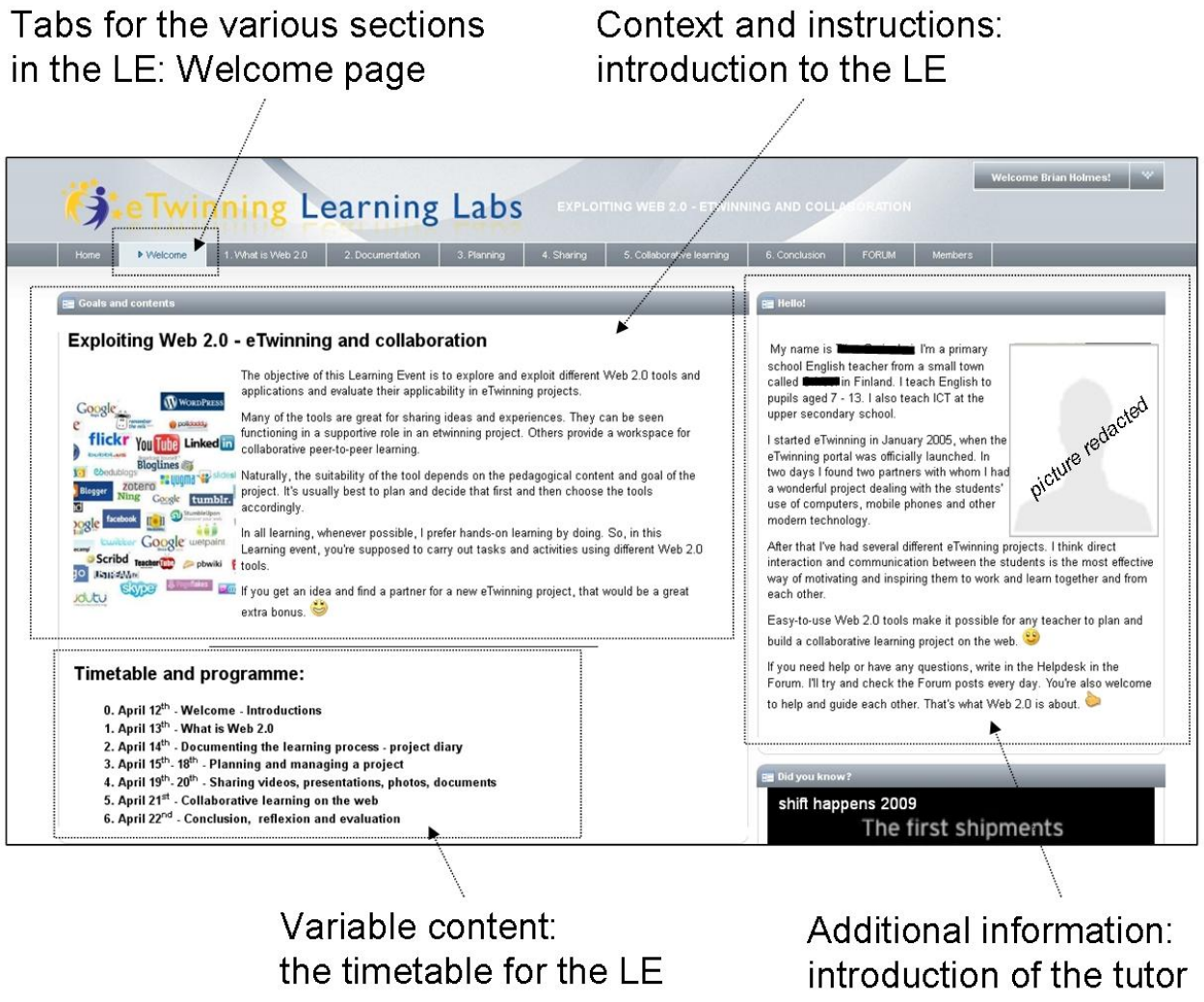


Figure 1-2

First LE: Welcome page (top part) showing the various elements of a typical page

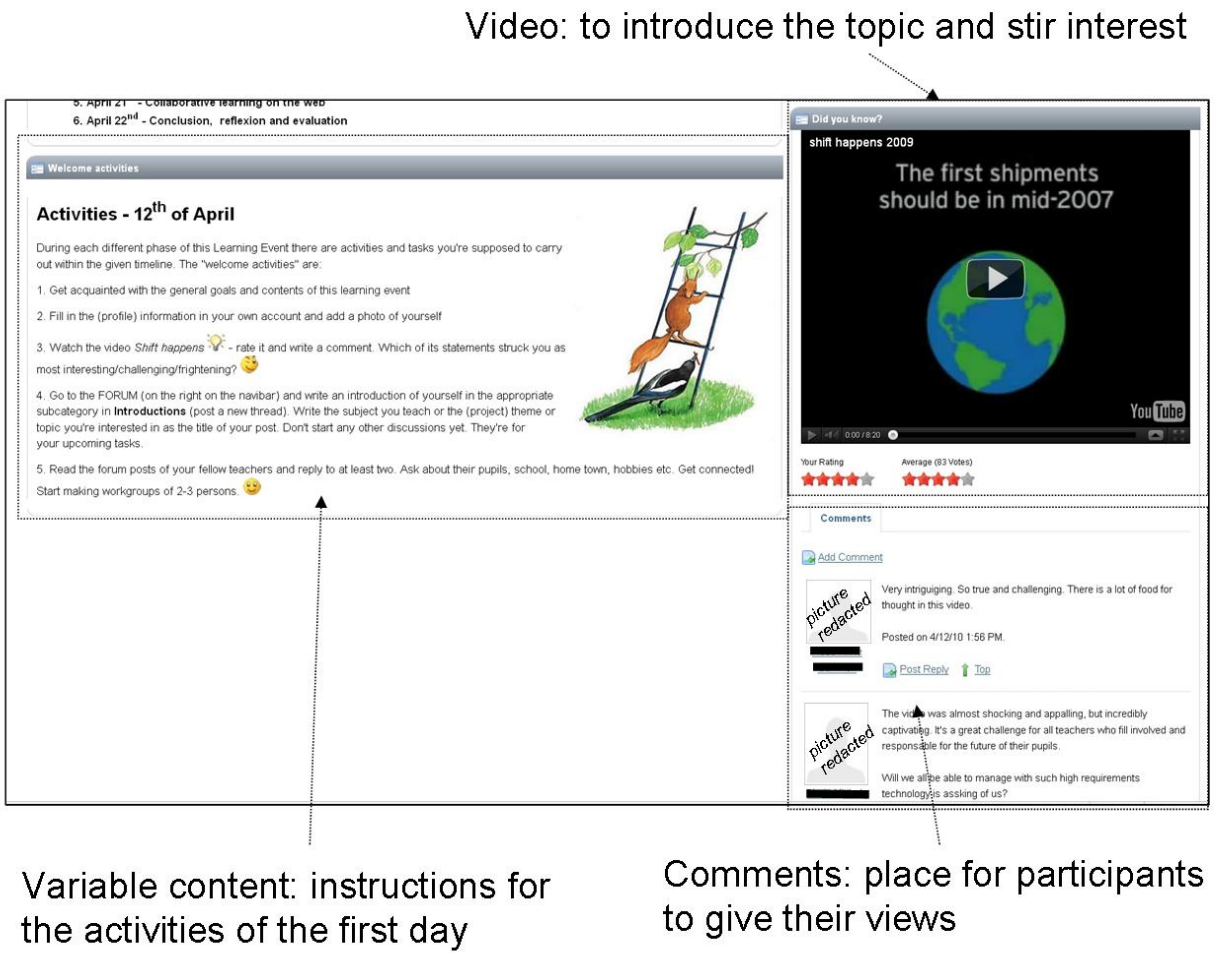


Figure 1-3

First LE: Welcome page (bottom part) showing the various elements of a typical page

Figure 1-4

First LE: Example profile page

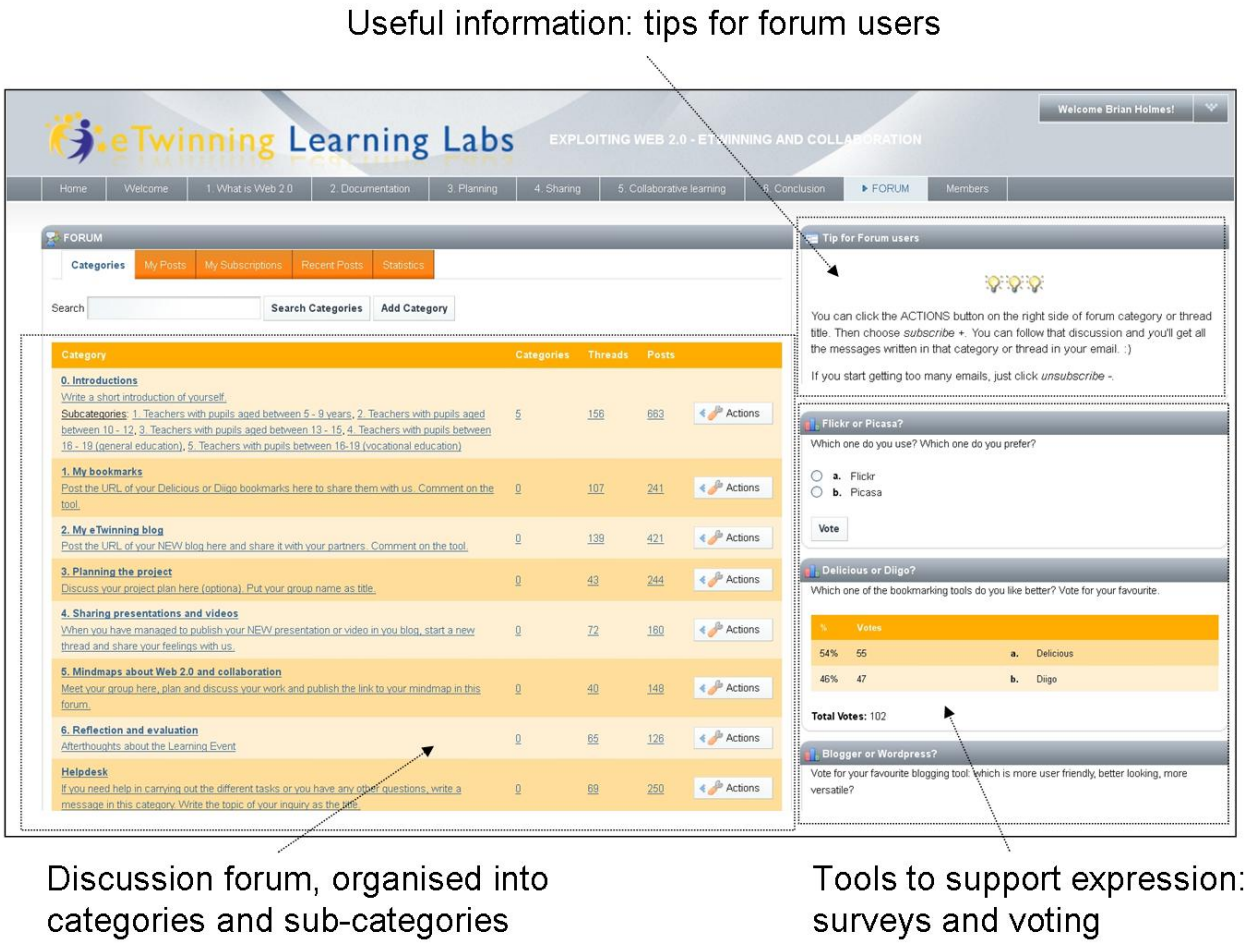


Figure 1-5

First LE: Discussion forum, showing the list of categories

1.4 Underlying theoretical framework

In deciding how best to analyse the LE and in particular the online discourse, several frameworks were considered including the model of e-learning proposed by Anderson (2008b), Bloom's taxonomy for educational objectives (Bloom and Krathwohl, 1956, cited in Meyer, 2004), and Ohlson's epistemic tasks (Ohlson, 1995, cited in Goodyear and Zenios, 2007). The framework that emerged as the most appropriate is the Community of Inquiry (CoI) by Garrison, Anderson and Archer (2000). The CoI offers a holistic approach to analysing the use of computer-mediated communication (CMC) for educational purposes (Garrison et al., 2000). Its strength lies in the way in which it considers the elements of learning, social interaction, tutoring and facilitation as being interrelated and mutually dependent. They are portrayed as three overlapping elements at the core of the educational experience: cognitive presence, social presence and teaching presence (see Figure 1-6).

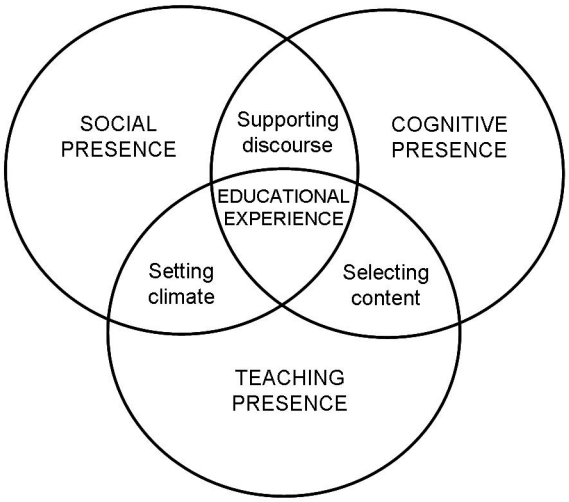


Figure 1-6 The Community of Inquiry framework (Garrison et al., 2000, p.88)

Cognitive presence is defined as 'the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication' (Garrison and Arbaugh, 2007, p.89) and is seen as vital to critical thinking and metacognition (Akyol and Garrison, 2011).

Teaching presence relates to the design of the educational setting and the facilitation offered during the learning process. Whereas the former is often the remit of the teacher or tutor, the latter may be shared with the participants as they collaborate and offer each other mutual support (Garrison et al., 2000).

Social presence is defined as 'the ability of participants in a community of inquiry to project themselves socially and emotionally, as “real” people (i.e. their full personality), through the medium of communication being used’ (Garrison et al., 2000, p.94).

The research literature relating to the CoI framework is further discussed in section 2.2. In the next section, the research questions that guided the research in the context of the LE are discussed.

1.5 Research questions

My ideas for the research were discussed with the tutor Tiina and the colleagues at EUN in order to ascertain what aspects would be of interest to them and relevant for the future of eTwinning. The satisfaction surveys conducted thus far on the LEs and the eTwinning groups (eTwinning, 2009, p.56) had clearly indicated the success of the initiatives: ‘Providing online training at a central level this school year through the Learning Events has responded perfectly to the need for further professional development opportunities’. The surveys had been conducted via questionnaires, and whereas they provided a taste of what school teachers felt, they did not go into details of what happened and why. To understand these aspects better, it was agreed that more in-depth, qualitative research was needed over a longer time frame.

In light of the discussions, I decided to focus my research on the influence of the online community on the development of school teachers’ competence and practice, and the influence of the intertwined aspects of cognitive presence, teaching presence and social presence. The research questions thus evolved into the following:

Research questions

In an eTwinning Learning Event (LE) for school teachers’ continuous professional development:

- how does the online learning community influence the development of teachers’ cognition, practice and competence?
- how do teaching presence and social presence influence the collaboration, the cognitive presence and the development of the community?

In the following section, the approach used to carry out the research is introduced.

1.6 Research approach

Action research was chosen as the most appropriate methodology to use as it involves close collaboration between researcher and practitioners, with an emphasis on promoting change (Budd, Thorp and Donohue, 1967, cited in D. E. Gray, 2004), during the research process rather than as an afterthought in the research conclusions (Denscombe, 2007). The research was conducted together with Tiina, the domain expert and tutor who organised and led the events, and the colleagues from EUN, in two cycles of the LE on Web 2.0, in April and November 2010. As Day and Sachs (2004, p.24) posit, action research puts 'the research in the hands of those engaged in the educational enterprise as equal partners'. Tiina was a fellow researcher who supported the ongoing reflections and helped to interpret the results. In a similar way the researcher was a fellow tutor who supported Tiina to guide the group. The researcher was an active participant in the social situation being analysed, working as Groundwater-Smith and Dadds (2004, p.242) suggest '*with* teachers, rather than *on* teachers'. This was illustrated by the messages received from participants asking me to be their 'friend' in the eTwinning environment and by their suggestion that I could work with them on their projects; I was perceived as a fellow member of the teaching community.

Action research is 'holistic and context bound, producing practical solutions and new knowledge as part of an integrated set of activities' (Greenwood and Levin, 1998, cited in Blaxter et al., 2006, p.67). It produces tangible outcomes and valuable insights, both for the researcher and for the participants, emphasising the value of insider knowledge (2006). The results of this research are presented as a case study, as often occurs with action research (Koshy, 2010), offering a 'thick' in-depth look at a particular example of an online learning community. The research methodology is further discussed in section 3.1.

In the next section, the intended audience for the research is confirmed.

1.7 Intended audience

Educators may find the research useful in understanding the factors that influence the success of online communities for learning in general and the eTwinning LEs in particular. Teacher trainers may be interested in aspects relating to the educators' role in online learning communities and to their competence development. Policymakers may also be interested in the implications for school teachers' professional

development programmes of learning in action, collaborating and sharing experience with peers, in online teacher communities across borders.

Researchers may be interested in the analysis of cognitive, social and teaching aspects of an online community from a holistic perspective, and in particular, the interdependencies of the three presences and their impact on participants' learning. Researchers may gain insight from the use of the CoI framework in a domain outside of higher education, where most examples have been so far, and from the experience of applying the associated coding schemes in a recent case study employing modern Web 2.0 technology.

1.8 Overview of the thesis

The remainder of the document is structured as follows.

Chapter 2	Discusses relevant research literature concerning communities, their use online and in education, the CoI framework and teachers' CPD. It confirms the gap in the literature on online learning communities for teachers' CPD.
Chapter 3	Discusses the research design, the methods used for data collection and the approach used for analysis. It looks at the role of the researcher, his philosophical stance on learning and the ethical approach adopted.
Chapter 4	Presents the findings from first cycle of action research: participants' perceptions of the first Learning Event (LE1), collected via a questionnaire.
Chapter 5	Analyses and discusses the findings from the first cycle, offering recommendations and describing how these were implemented in the second Learning Event (LE2).
Chapter 6	Presents part of the findings from second cycle of action research: participants' perceptions of LE2, collected via a questionnaire and interviews.
Chapter 7	Presents the remainder of the findings from second cycle of action research: the online discourse as collected through the coding of participants' messages.
Chapter 8	Analyses and discusses the findings from the second cycle. Concludes by providing answers to the research questions, reflections on the research and the implications for practice and future research.
Reference List	Provides a complete list of referenced works

Chapter 2 Literature Review

This chapter discusses the research literature related to communities, their online variants and their use for learning. It considers the Community of Inquiry (CoI) theoretical framework (Garrison et al., 2000) and its use for analysing online communities from a holistic, educational perspective. It discusses the professional development of teachers and the move towards using professional learning communities and teacher networks to augment more traditional approaches. Finally, it considers the gap in the research literature concerning online learning communities for teachers' professional development and their analysis using the CoI framework.

2.1 Communities and their online variants for learning

2.1.1 The social phenomenon of a community

The term *community* has been used for many years in anthropology and sociology, and although there appears to be no single coherent definition (Cohen, 1985), several common characteristics do emerge from the literature. These characteristics are discussed here briefly, before moving on to consider how the social phenomenon of a community may be usefully applied in education.

Early definitions describe a community as a complete, self-contained entity with clear boundaries (Theodori, 2005). Contemporary use, on the other hand, involves a more flexible interpretation in which individuals can be members of several, intersecting communities (Wilson and Leighton, 2002) and physical location is replaced by a common space, be it physical or virtual. Cohen (1985) emphasises both commonalities and differences between members of a community, and focuses on the relationships that bind them, rather than the symbolic boundaries that separate them from others. McClenaghan (2000, p.571) sees a community as 'a homogeneous social structure implying common processes in the generation and acceptance of fundamentally positive social norms, values and practices'. McMillan and Chavis (1986) offer a view from psychology that defines a *sense of community* as being made up of a) membership, the feeling of belonging; b) influence, a sense of making a difference to the group; c) reinforcement, members' needs being met through shared resources; and d) shared emotional connection. These perspectives are noteworthy as they focus on the emotional bonds that keep the members together, rather than on the bounded community itself, and suggest that a community is more than just a group of people with loose social ties and a short history.

The social 'glue' that unites a community and gives it its identity may be described as *social capital*:

> Social capital consists of the stock of active connections among people: the trust, mutual understanding, and shared values and behaviours that bind the members of human networks and communities and make co-operative action possible. (Cohen and Prusak, 2001, p.4)

Nahapiet and Ghoshal (1998) posit that social capital facilitates the development of intellectual capital (through learning) and that three dimensions are needed for this to happen effectively: structural, relational and cognitive. Structural includes the tools and resources to facilitate contact and to find relevant expertise. Relational reflects the network of personal relationships developed through a history of interactions. Cognitive reflects the sharing of knowledge and the establishment of a common understanding, through shared languages, artefacts and stories. These dimensions map well with the three presences of the Community of Inquiry (CoI) framework: teaching, social and cognitive, respectively (as introduced in section 1.4 and discussed further below). They highlight the potential of a community to support learning.

Social capital is generally perceived as positive, however under some circumstances it may hinder learning and the process of change. The strong norms and mutual identification that form can lead to a lack of openness to newcomers and to new ways of doing things, leading to a 'collective blindness' (Nahapiet and Ghoshal, 1998, p.245). Strong social capital in communities that transcend organisations may cause conflict of loyalty, values and norms (Daniel et al., 2003). This may cause tension, for example, in a community of teachers that involves different schools with different educational policies.

In order to better understand the potential benefit of communities for education, one has to look more closely at collaboration in social groupings, the underlying learning philosophy and the epistemological dimensions.

2.1.2 Collaboration, reflection and social constructivism

For many years, behaviourist theories of learning dominated education with learning perceived as a process whereby tangible knowledge is 'transferred' from the teacher to the learner. More recently, social constructivist theories have emerged that see learning not as a process of transmission of abstract, de-contextualised knowledge to

an individual but rather as a process situated in a social context where knowledge is 'constructed' by the participants (Kimble et al., 2008). Social constructivism has its roots in the work of Vykotsky (1978, p.86) who studied the development of children and devised the term Zone of Proximal Development (ZPD) to describe the difference between the actual development of children and the potential development when 'under adult guidance or in collaboration with more capable peers'. His work is significant in highlighting the socio-cultural nature of learning and the potential to learn from knowledgeable peers.

Lave and Wenger (1991) posit that Vygotsky's ZPD has received significantly different interpretations which they class into three broad groups. The first sees the ZPD as representing the distance between the learners' capability to solve problems working alone and their capability when collaborating with more-experienced people. This interpretation of the ZPD has inspired pedagogical approaches based on the use of 'scaffolding' to initially guide learners until they become more autonomous and is encapsulated in the Community of Inquiry framework as 'teaching presence', as discussed further in section 2.2.2. The second interpretation sees the ZPD in terms of the distance between the everyday experience of the learner and the cultural knowledge provided by the socio-historical context. It is based on Vykotsky's argument that scientific knowledge and everyday knowledge are complementary and interplay during learning. This interpretation relates closely to the work of Schön (1987) on reflective practice and of Cochran-Smith and Lytle (1999) on the interplay between teachers' professional knowledge and their practical experience, as discussed later in section 2.3.2. The third interpretation takes a societal or 'collectivist' view of learning as a process of socio-cultural transformation that changes social practice (Lave and Wenger, 1991). It is the foundation of Wenger's subsequent work on Communities of Practice (Wenger, 1999a; Wenger, 1999b) and has influenced research on learning communities and networked learning, as discussed further in section 2.1.3.

This research does not favour one interpretation of Vygotsky's work over another, but rather sees each of them as contributing to a broad view of social constructivism.

Goodyear and Zenios (2007, p.357) posit that deep or higher-order learning occurs through collaboration when participation in cognitive or epistemic tasks – such as describing, arguing, critiquing and explicating – leads to 'the kinds of learning implicated in *coming to understand'*. A group develops common meaning through discussion and externalisation of individual interpretations which are then re-internalised and interpreted by individuals (Goodyear, 2002; Stahl, 2005). Such

meaning making is essentially a social activity that is conducted jointly and collaboratively by a community (Stahl, 2003) and is an integral part of our social practices (Derry, 2007). Stahl (2003, p.1) argues that meaning is 'not merely transferred from mind to mind by activities, but … is constructed by and exists in those activities'. Wenger refers to the need for *reification,* the process of turning our interpretations into artefacts – tools, symbols, stories, etc – that make our practice more concrete (Wenger, 1999a). Similarly, referring to the work of Dewey, Schön explains the importance of learning in meaningful contexts, where the learner can 'see on his own behalf and in his own way relations between means and methods employed and results achieved' (Dewey, 1974, cited in Schön, 1987, p.17). Schön posits the need for *reflection in action* as well as *reflection after action*, so that our learning and our practice is influenced by what we actually experience and is not just the result of some abstract, generic competence taught in the disembodied setting of a school. Reflection is further discussed in relation to teachers' professional development in section 2.3.

Anderson and Dron (2011, p.85) posit that social constructivist theories share several themes in common such as learning as an active process and knowledge development requiring 'social discussion, validation, and application in real world contexts'. They argue that for many years distance education relied on communication on a one-to-one or one-to-many basis between tutor and students, for example via the postal service, and that this constraint on interaction limited the use of social constructivist approaches to learning. It is only with the recent advent of interactive technology over the Internet that such approaches have become possible: 'social-constructivist models only began to gain a foothold in distance education when the technologies of many-to-many communication became widely available, enabled first by email and bulletin boards, and later through the World Wide Web and mobile technologies' (2011, p.85).

2.1.3 Online communities and networked learning

The potential of social computing to support social constructivist approaches to learning has provoked renewed interest by educationalists in the concept of a community (Ala-Mutka, 2010; OECD, 2008). Indeed, there is growing evidence to suggest that this social phenomenon may be put to good use in the support of online learning (Rheingold, 2000; Brook and Oliver, 2003; Lai et al., 2006; McConnell, 2006; Palloff and Pratt, 2007; Hildreth and Kimble, 2008; Ala-Mutka, 2010).

Extensive research literature already exists for co-located, presential communities. However, much less is known about online communities (McConnell, 2006) and

concerns have been raised that the term is being applied without due consideration for the characteristics that distinguish the social phenomenon (as discussed at the start of section 2.1). Preece and Maloney-Krichmar (2003) posit that there is no accepted definition of an online community and Grossman et al. (2000, p.3) note that 'Groups of people become community, or so it would seem, by the flourish of a researcher's pen'. Riverin and Stacey (2008) caution that a community cannot be formed by simply creating an electronic forum and Lai et al. (2006) emphasise that long term investment is required for a community to develop.

Providing the right technological environment and social affordances for a community is no guarantee that effective learning will take place. Riel and Polin (2004, p.18) caution that 'simply labelling a group of people as a community neither ensures that it functions as one, nor that it is a beneficial, cohesive unit in which learning will take place readily'. Grossmann et al. (2000, p.6) note that the term community has become 'an obligatory appendage to every educational innovation'. McConnell (2006, p.21) adds that 'the idea of a community is currently being applied in too many educational contexts with little apparent understanding of what it might, or should, mean'.

The following literature suggests that the extent to which learning is the main objective of a community can have epistemological and ontological implications, concerning the importance of shared activities, knowledge and practice, and the relationship between novices, experts and artefacts. McConnell (2006, p.21) proposes three broad concepts of communities involving online learning: a *learning community* in which a group of learners engage in a 'collective effort of understanding', with shared responsibility for learning and a belief that the group can learn more by cooperating than it could by learning alone; a *community of practice* (CoP) that focuses on shared professional practice in a common domain in which the identities of the participants are both influencing the CoP and influenced by it; and a *knowledge building community* in which cooperation goes further, as students collaborate to arrive at a group understanding and the generation of new knowledge. Riel and Polin (2004) suggest three different types of online community for supporting learning: *task based, practice based* and *knowledge based*. The first is usually short-term, output orientated and focused on individual learning in a group context; an example would be a community of students established as part of a formal course in higher education. The latter two, on the other hand, emphasise longer-term groupings benefiting both the individuals and the community; an example would be a CoP for policymakers developing educational policy.

In describing CoP, most literature makes reference to the early seminal work of Jean Lave and Etienne Wenger, which explains the specific features of CoP and their benefits for learning (Lave and Wenger, 1991; Wenger, 1999a). Lave and Wenger (1991, p.98) espouse a social theory of learning, describing CoP as 'a set of relations among persons, activity and world' in which learning is encouraged through meaning, practice, community and identity. Wenger (1999a) emphasises that we are fundamentally social beings and that knowledge is developed through valued enterprise and active engagement with our surroundings. For learning to be valuable, it needs to be meaningful. In describing CoP, he asserts that there must be mutual engagement, a joint enterprise and a shared repertoire. Daele et al. (2007) describe CoPs in terms of peer-orientated learning, in a collaborative manner, over a prolonged period. Lai et al. (2006) see them as informal communities, not necessarily task orientated, with diverse and heterogeneous membership, developing shared practice.

Online learning communities are similar in many ways to online CoP. They both encourage collaboration and sharing amongst peers in informal social settings, engendering mutual trust, shared values and the development of strong ties. They differ, however, in their focus on learning (Wubbels, 2007): with CoP the primary focus is on 'identity and identity formation in the context of professional practice' (McConnell, 2006, p.21); with learning communities the primary focus is on learning (Riel and Polin, 2004) and the 'development of a culture of learning' (McConnell, 2006, p.21). CoP develop shared resources through participation and the reification of knowledge (Wenger, 1999a). Learning communities develop competence, through collaboration, reflection and transformative learning (Palloff and Pratt, 2007). In CoP experts work with novices (or trainees and apprentices) and there is a difference in status, whereas in learning communities all participants are likely to be learners with a more equal status (Eraut, 2002). Whereas this distinction is not black and white, and both types of community support learning, the primary focus on learning does become important when one considers the cognitive and organisational aspects.

In the context of online communities, there is quite a debate in the literature on the nature of the relationships between online learners, the role of collaboration and the importance of valuing difference as opposed to encouraging consensus. The rise of the networked society (Castells, 2000), the concept of 'networked individualism' (Wellman et al., 2003) and the role of weak ties (Kavanaugh et al., 2005) is seen by some as encapsulating a more powerful paradigm for learning in a modern society, than a renewed emphasis on strong ties, social capital and learning communities. Whereas strong ties emphasise relationship, reciprocity and emotional attachment, weak ties are more instrumental in supporting the flow of information between groups

and across networks. Some authors see these not as a dichotomy, but rather as complementary relationships that render communities more effective for organising collective action (Kavanaugh et al., 2005). Concerns have been raised about an over emphasis on collaborative learning and communities, especially in higher education. Fox (2005) wonders whether it is simply a prevailing feeling of nostalgia for the strong, tight communities of the past and suggests a more imaginative view of communities which is international and multicultural in nature. Ryberg and Larsen (2008, p.105) critique these 'exotic islands and bounded social spaces' and propose the *network* as a better metaphor for social forms of online learning. Hodgson and Reynolds (2002; 2005) suggest that we are seeing a reaction to a previously exaggerated emphasis on individual autonomy and caution that the pursuit of common goals, loyalty, trust and shared values in a community may be at the expense of recognising and valuing differences (Reynolds and Trehan, 2003). Students who hold differing opinions or values are often under pressure to conform or effectively be ostracised for fear of undermining the community's integrity. This may lead some students to underperform (to lurk rather than participate as a dissenting voice), to undergo frustration or to feel marginalised.

Networked learning is often seen as an alternative approach that embraces network individualism and the multitude of learning resources, opportunities and relationships available via the internet (Jones, 2004). It 'incorporates insights and assumptions from a number of theoretical perspectives' (Dirckinck-Holmfeld et al., 2004, p.5) and unlike Computer Supported Collaborative Learning (CSCL), does not privilege 'collaboration over other kinds of relationships' (2004, p12), emphasising instead the strength of weak as well as strong ties (Ryberg and Larsen, 2008).

> The idea of online communities also tends to separate out and privilege the virtual against the real. The ideas of online and offline communities need to merge in the activity of real people who are both simultaneously on and offline when they are engaged with computer networks. (Jones and Esnault, 2004, p.91)

Blended learning is a term often used in education to capture the idea of learning being a mix of online and offline activities, of different tools and media, of different pedagogical approaches, etc. However, the concept has been criticised for placing emphasis on learning as seen by the teacher and for having many different meanings, to the extent that 'building a tradition of research around the term becomes an impossible project' (Oliver and Trigwell, 2005, p.24).

Despite the rhetoric, the vision put forward in network learning is not at odds with that of online learning communities. On the contrary, networked learning embraces both individual and group learning in the context of multiple communities that embrace and value difference. Communities are thus part of a bigger picture, 'they are special cases of more general network phenomena that rely on a particular form of individualisation' (Jones, 2004, p.86). The important point raised by the proponents of networked learning is that attention must be paid to issues of democracy, power and culture in an online learning community if we are to avoid the 'tyranny of participation and collaboration' (Ferreday and Hodgson, 2009) associated with an over emphasis on collaboration and consensus, as previously discussed. This in turn implies careful design, organisation and facilitation of the educational experience. The next section discusses the literature concerning these aspects in more detail, returning to the literature on the CoI framework and using the three presences to look more closely at the importance of the cognitive, teaching and social aspects for an effective online community focused on learning.

2.2 Community of Inquiry framework

The Community of Inquiry (CoI) framework, introduced in section 1.4, was originally devised for computer-mediated communication (CMC) in higher education and has its roots in Dewey's (1959) work on the collaborative reconstruction of experience in social contexts. The framework has 'been adopted and adapted by hundreds of scholars working throughout the world' (Garrison et al., 2010a, p.5), cited in more than 1300 scholarly papers (Google Scholar as of May 2012) and validated in several studies (Arbaugh, 2007; Arbaugh et al., 2008; Swan et al., 2008; Bangert, 2009). The model has been gaining interest in other domains, such as business education (Arbaugh and Hwang, 2006), schools (Simpson, 2010), adult learning (Ke, 2010), foreign language teaching (Arnold and Ducate, 2006; Lomicka and Lord, 2007) and teacher training (Darling, 2001).

The CoI framework is accompanied by research proposing schemes to analyse online content from the perspective of the three presences, with categories for coding messages and example indicators (summarised in Table 2-1 and further discussed below). Content analysis aims to 'reveal information that is not situated at the surface of the transcripts' (De Wever et al., 2006, p.7). Henri (1992, p.119) was one of the first to recognise the value of analysing transcripts as a way of understanding the underlying learning process, whilst recognising the unique nature of CMC discourse: '…a participant's contributions must be considered both singly and in relation to others if the processes and strategies used by each of the learners are to be identified'.

She argues that 'It is time to give up strictly quantitative approaches for qualitative approaches, to analyse the interactive exchanges of CMC and to demonstrate the effects and advantages of interactive exchange in learning' (1992, p.122) and proposes an analytical model which has been used and adapted extensively by other researchers (Rourke et al., 2001b; Marra et al., 2004; Gerbic and Stacey, 2005; De Wever et al., 2006; Buraphadeja and Dawson, 2008). However, Henri's scheme has also been criticised for its behaviourist perspective (Rourke et al., 2001b) and its focus on teacher centred instruction (Gunawardena et al., 1997). Enriquez (2009) notes that the context of the transcripts – the technology, the physical settings of the learners and other conditions – are not considered in content analysis, but acknowledges that the use of mixed methods helps to alleviate some of the problems of transcript analysis.

Elements	*Categories (or codes)*	*Indicators (examples)*
Cognitive presence	Triggering event	Sense of puzzlement
	Exploration	Information exchange
	Integration	Connecting ideas
	Resolution	Applying new ideas
Social presence	Emotional expression	Emotions
	Open communication	Risk-free expression
	Group cohesion	Encouraging collaboration
Teaching presence	Instructional management	Defining and initiating discussion topics
	Building understanding	Sharing personal meaning
	Direct instruction	Focusing discussion

Table 2-1 CoI coding template (Garrison et al., 2000, p.89)

Serious critiques of the CoI framework are rare (Garrison et al., 2006). However, in a review of the CoI literature, Rouke and Kanuka (2009) raise concerns about the lack of focus on deep and meaningful learning, suggesting that many issues examined are peripheral to the CoI framework, such as student satisfaction. They criticise the tendency to use student self-reporting as an assessment of learning, often via single mode data collection such as a questionnaire. They note that most studies report that cognitive presence remains at the lower levels of cognition and comment that techniques used to raise the level of discourse are often missing. In a subsequent response, Akyol et al. (2009) reiterate that the CoI framework focuses on the process of learning and not the outcomes, per se. They point out that student perceptions' of learning have been validated in research elsewhere (Ice et al., 2007) and that other data, such as student grades, is also taken into consideration when considering learning outcomes in a CoI. They posit that the lack of cognitive achievement identified in some studies reflects a weakness in the educational experience, such as a

lack of teaching presence, rather than a failure of the CoI framework itself. In a more recent review of the framework, Jézégou (2010) responds to the critique of Rouke and Kanuka by looking at the key tenets of collaboration and self-direction in more detail. She asserts that whereas there are theoretical insufficiencies in the original description of the framework, her analysis 'has eliminated our doubts about the model's conceptual solidity and its relevance' (2010, online). However, she adds that refinement of the indicators used in the three coding schemes is necessary in order to avoid overlap in their use in studies that consider all three presences in parallel.

The following sections discuss the three presences in turn and their contribution to the CoI model. The practical application of the coding schemes proposed by Garrison et al. (2000), summarised in Table 2-1, is further discussed in section 8.2.3.

2.2.1 Cognitive presence

Based upon a conceptual model for developing critical thinking in adult learners (Garrison, 1991), Garrison et al. (2000; 2001) propose a Practical Inquiry model to analyse cognitive presence in an online context. They suggest the process has four key stages: 1) triggering event, where some issue or problem is identified provoking cognitive dissonance; 2) exploration, where students move between the private and the shared world to explore the issue through critical reflection and discourse; 3) integration, where students integrate ideas and explore meaning through critical thinking; and 4) resolution, where students apply the new knowledge to solve the original problem through 'direct or vicarious action' (2001, p.5), see Figure 2-1.

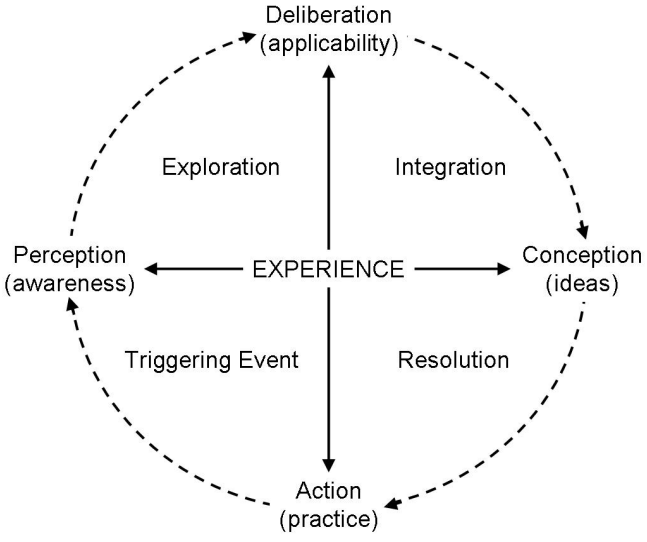


Figure 2-1 The Practical Inquiry model (Garrison et al., 2000, p.99)

Cognitive presence is at the heart of the learning process and is perhaps the most difficult presence to achieve (Arbaugh, 2007). Interaction within an online community may be good for group cohesion, but is no guarantee of purposeful and systemic discourse (Garrison and Cleveland-Innes, 2005). Shea et al. (2010) note that it is hard to move the discourse into the higher levels of cognitive presence. Garrison and Arbaugh (2007) suggest that the way questions are initially presented to the students can have a significant, positive impact. They add that increased student awareness of their own meta-cognitive state may support critical thinking and that this may be provided by the teacher. Often a strong teaching presence is required to foster higher-level thinking (Anderson et al., 2001); depicted as integration and resolution in the Practical Inquiry model. On the other hand, cognitive presence alone is not enough to sustain a critical community of learners; it needs to be nurtured by the socio-emotional dimension of the online interaction (Garrison et al., 2000), which in turn requires social presence.

The Practical Inquiry model is accompanied by categories and indicators to assess the development of critical thinking in an online discussion through content analysis. For example, 'expressing a sense of puzzlement' is proposed as an indicator for the triggering event stage of cognitive presence (Garrison et al., 2001), see Table 2-1.

Meyer (2004) evaluated four different frameworks for analysing online discussions, including Garrison et al.'s (2001) Practical Inquiry model and Bloom's taxonomy for educational objectives (Bloom and Krathwohl, 1956, cited in Meyer, 2004) – the latter is often cited as an alternative model to the CoI for analysing critical thinking in online contexts (e.g. Szabo and Schwartz, 2011). The study concluded that each framework captures unique and different qualities, and is suitable for a range of student abilities and ages. However, in a similar study Schrire (2004) used three models to analyse cognition in an asynchronous environment, including Bloom's taxonomy and the SOLO taxonomy (Biggs & Collis, 1982, cited in Schrire, 2004). She noted that the Practical Inquiry model 'was found to be the most relevant to the analysis of the cognitive dimension and presents a clear picture of the knowledge-building processes occurring in online discussion' (2004, p.491). In a later study, Buraphadeja and Dawson (2008) also posit that the Practical Inquiry model is well suited to analysing critical thinking, in comparison with other models.

In a more recent paper, Akyol and Garrison (2011) discuss the subject of metacognition in the context of the CoI. They refer to the work of Tobias and Everson (2009, cited in Akyol and Garrison, 2011, p.183) introducing metacognition as 'a higher-order, executive process that monitors and coordinates other cognitive

processes engaged during learning, such as recall, rehearsal, or problem solving'. They posit that critical thinking and assessment of one's own learning is essential for metacognition, however it is not enough. It also requires self-corrective strategies. As such, they propose that metacognition in online elearning is comprised of three interrelated dimensions: knowledge of cognition, monitoring of cognition and regulation of cognition. In terms of the CoI framework, they see metacognition as being manifest in the intersection of the cognitive and teaching presence of the participants; a participant undergoing metacognition has high cognitive presence and teaching presence, with the latter being used to facilitate the work of the group so that their own internal learning is mediated with the collaborative learning activities. Whereas metacognition is important for cognitive development, the argument advanced by Akyol and Garrison that it is at the intersection of cognitive and teaching practice is hard to assess in practice, with little information being given to support content analysis. Further reflections on the application of the cognitive presence coding scheme, including the definitions, are given in section 8.2.3.

2.2.2 Teaching presence

Building upon the scheme initially proposed by Garrison et al. (2000), Anderson et al. (2001) propose three categories and a set of indicators to analyse teaching presence in an online environment: design and organisation, facilitating discourse and direct instruction. Design may include choosing and setting-up the relevant software environment with appropriate social affordances (Kreijns et al., 2002), preparing the content and defining the cognitive activities. Referring to the work of Laurillard et al. (2000), Anderson et al. (2001) suggest that the design should create a narrative path for learners through the material and activities, with clear learning goals. Moreover, a study by Shea (2006) suggests that teaching presence can reinforce the sense of community perceived by learners.

Facilitation involves supporting and encouraging participation, modelling appropriate behaviour and guiding the discourse to higher levels (Anderson et al., 2001). It also involves encouraging students to value differences (Reynolds and Trehan, 2003; Hodgson and Reynolds, 2005), to be critical in their thinking but respectful of others (Garrison et al., 2001; Garrison and Cleveland-Innes, 2005) and to resolve conflicts by identifying and building upon consensus (Anderson et al., 2001). Some studies have suggested that without suitable facilitation, discourse can remain at a superficial level with low cognitive presence (Angeli et al., 2003; Pawan et al., 2003).

Direct instruction is associated with the teacher intervening, when necessary, to scaffold learning and offer expertise. Anderson et al. (2001) posit that for an educational experience to be of high quality, it is necessary for the teacher to be a subject matter expert. In this respect they disagree with Salmon's (2000) view of a teacher, as an eModerator, needing only minimal expertise in the subject matter and appear to be more in agreement with Dillenbourg's (2008) views on teachers being at the core of the learning process, orchestrating learning. Arbaugh (2007) suggests that a well designed course may actually limit or negate the need for an instructor. In reality the situation is probably less black and white, with a teacher needing to adopt a style which is flexible and appropriate to the online learning context (Vlachopoulos and McAleese, 2004; Vlachopoulos and Cowan, 2010).

Dillenbourg (2008) argues that it is a mistake to think that the role of teachers, trainers, tutors, etc. is any less important in an online environment. Referring to the often-used slogan 'from sage on the stage to guide on the side' he emphasises that teachers have a central role in 'orchestrating' an integrated approach to learning. Gray (2004) recalls the importance of educators having the necessary technical, organisational and social competence to carry out a variety of roles. Moreover, the teaching presence of the educator in an international online community needs to be sensitive to the linguistic and cultural diversity of the participants (Bélisle, 2007; Gilleran, 2007).

Salmon (2000) suggests that online groups progress through five key stages of development and that each requires participants to master different skills and moderators to perform different activities. In a similar vein, McConnell (2006) suggests that teachers and trainers need to develop skills in three important components for online learning: *initiating activity*, providing initial scaffolding and inviting discussion amongst participants; *fostering group self-management*, engendering a supportive environment, encouraging reflection and mutual support; *maintaining activity*, finding patterns, and intervening where necessary to provoke critical thinking. These approaches have elements in common: they see the role of the teacher, trainer or tutor as being central to the process of learning; they see their role changing as the group develops, moving from designer and initiator of action, to facilitator and critical friend (Costa and Kallick, 1993); and they see the intensity and timing of their interventions being dependent on the learning context, the needs of the learners and the stage of group development.

Many aspects need to be taken into account when designing, organising and facilitating an online community (Palloff and Pratt, 1999; Brook and Oliver, 2003;

Barab et al., 2004; Lai et al., 2006; Anderson, 2008a; Wenger et al., 2009). However, Anderson (2008b, p.52) cautions that 'a single environment that responds to all students' needs does not exist'.

2.2.3 Social presence

Referring to the work of Gunawardena (1995), Garrison et al. (2000) emphasise that social presence is a reflection of a participant's ability to connect socially and emotionally, rather than simply being an effect of the communication media. As such, social presence supports the development of social capital and the strengthening of the social ties that bind a community together, as discussed in section 2.1.

Social presence may be defined as 'the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship' (Short et al., 1976, cited in Gunawardena and Zittle, 1997, p.9), 'the degree to which learners feel socially and emotionally connected with others in an online environment' (Swan et al., 2008, p.1) and 'the ability to project one's self and establish personal and purposeful relationships' (Garrison, 2007, p.63). It is associated with feelings of *intimacy* and *immediacy* and is a predictor of learner satisfaction in online environments (Gunawardena and Zittle, 1997).

Social presence is what distinguishes a community from a group that is simply exchanging information; 'The difference is the quality of the message; in a true community of inquiry, the tone of the messages is questioning but engaging, expressive but responsive, skeptical but respectful, and challenging but supportive' (Garrison et al., 2000, p.96). Swan and Shih (2005) suggest that social presence aspects of online discussions are more important to students than interactive ones. However, Garrison and Arbaugh (2007) posit that social presence needs to go beyond simply socio-emotional support and interaction needs to remain intellectual and purposeful. They argue that discussion requires facilitation, whereas discourse requires a disciplined approach and a knowledgeable teacher. Social presence both supports cognitive presence and is itself reinforced by online collaboration and discourse, which in turn is facilitated by teaching presence (Bangert, 2008). Social presence has been identified as an important factor for the establishment of trust, the development of a community and the building of social capital (Tu and Corry, 2001; Daniel, 2003; Levy, 2003; B. Gray, 2004; McConnell, 2006; Chen, 2007; Gannon-Leary and Fontainha, 2007; Moisey et al., 2008).

Social presence is important for ensuring that one's voice is heard above the 'collective and potentially more dominant voice of the community' (Vratulis and Dobson, 2008, p.287). It encourages mutual scaffolding between peers, when more formal guidance is missing and the context is deliberately left open in order to encourage deep learning (Volet and Wosnitza, 2004).

Garrison et al. (2000) propose three categories of indicators to analyse social presence in online discussions: Emotional expression, Open communication and Group cohesion, see Table 2-1. The expression of emotion, such as humour and self-disclosure, helps to bring people together and establish a relationship. Rourke et al. (2001a) note that CMC can limit the social cues and expressions of emotion that one would otherwise receive in a face-to-face encounter, but refer to studies that show that social interaction can remain personal and intense, with non-verbal cues being replaced by emoticons (for example Gunawardena and Zittle, 1997; Kanuka and Anderson, 1998). Open communication involves recognising the contributions of others by referring to them explicitly by name, by thanking them and by encouraging them to contribute further. As such, open communication is a sign of mutual support and respect. Group cohesion involves messages that encourage the group to work as a team, to collaborate and to share. Such messages encourage empathy and give participants a feeling of belonging.

Whereas social interaction may occur naturally and serendipitously in face-to-face situations, the same cannot be said of working online where the need for social interaction has often been neglected (Goodyear, 2002; Kreijns et al., 2002; Stahl, 2005; Dillenbourg, 2008).

> It was emphasised that socialising was essential as the 'glue' to hold online communities together and that it needed to be greatly valued as an important element in online dialogues. (Seddon and Postlethwaite, 2007, p.195)

Recent studies highlight the importance of social interaction and online learning environments are increasingly incorporating the tools necessary for interaction and collaboration, using the latest in social computing and Web 2.0 technologies (Chen, 2007; Dewiyanti et al., 2007; Ala-Mutka, 2010; Abedin et al., 2011). Building upon Gibson's definition of 'affordance' (1986), we may define the social affordance of a tool, within its environment, as what it offers, provides or furnishes for social interaction:

> Social affordances are properties of CSCL environment that act as social-contextual facilitators relevant for the learner's social interactions. (Kreijns et al., 2002, p.13)

This definition encompasses two relationships: the reciprocal one between the community members and the environment; and the 'perception-action coupling' whereby once a member becomes salient, social affordances invite and guide other members to interact with that member (Conole and Dyke, 2004, p.306). Boyle and Cook (2004, p.298), however, warn against a narrow application of affordances: 'To merely provide affordances for group interaction may be insufficient for the development of a true knowledge-building community'.

Although the three presences of the CoI are discussed separately in this section, the CoI framework sees them as intertwined and interdependent, with each influencing the other. This holistic view of online learning is further discussed in section 2.4, when considering the gap in the research literature.

2.3 Teachers' professional development, communities and networks

2.3.1 Teachers' continuous professional development

Guskey (2002, p.381) describes most professional development programmes for teachers as 'systematic efforts to bring about change in the classroom practices of teachers, in their attitudes and beliefs, and in the learning outcomes of students'. His definition of the prevailing situation reflects a policy-driven, systemic approach to bringing about change within education systems. Sugrue (2004) notes tensions between the growing professionalism of teachers, the increasing rhetoric on lifelong learning and the reality of their daily workload and life.

Day and Sachs (2004, p.12) suggest that teachers' continuous professional development (CPD) concerns a range of activities, both formal and informal, which 'meet the feeling, thinking, acting, life, context and change purposes of teachers over the span of their careers'. In the UK, Bolam and McMahon (2004) note that national policies increasingly include a regulatory framework for CPD with obligations placed on teachers to attend. Groundwater-Smith and Dadds (2004) see CPD as essential to the extension, renewal and growth of the teaching profession, which is both systemic and personal, and helps to retain a highly committed teaching force. Guskey (2002) suggests that teachers take part in CPD because they believe it will make them better teachers, and by this they understand that they will enhance student outcomes. He asserts that they are pragmatic in their approach, seeking out 'specific, concrete and

practical ideas that directly relate to the day-to-day operation of their classrooms' (2002, p.382).

Inspired by early change theorists such as Lewin (1935, cited in Guskey, 2002), many development programmes are still based on the belief that they can change teachers' attitudes and practices, and that this in turn will lead to a change in teaching practice and improvements in student learning (Guskey, 2002). Yet reviews of professional development consistently point to their ineffectiveness and Guskey calls for an alternative approach that recognises that teachers need to be convinced of the value of change before they will apply it.

> The crucial point is that it is not the professional development per se, but the experience of successful implementation that changes teachers' attitudes and beliefs. They believe it works because they have seen it work, and that experience shapes their attitudes and beliefs. (Guskey, 2002, p.383)

Hargreaves (1998) reminds us that we are social beings and that teaching is charged with positive emotion.

> It is not just a matter of knowing one's subject, being efficient, having the correct competences, or learning all the right techniques. Good teachers are not just well-oiled machines. They are emotional, passionate beings who connect with their students and fill their work and their classes with pleasure, creativity, challenge and joy. (Hargreaves, 1998, p.835)

Day and Sachs (2004) note that most CPD is based on a *deficit model* in which it is assumed that teachers need to be provided with the knowledge and skills that they do not yet have. Such an approach is evident in prescriptive national standards for teacher competencies, as used in Competency Based Training – discussed further below. They describe an alternative *aspirational model* which recognises that teachers are already doing a good job and that they can build upon this to further improve, for example by exchanging good practice with peers in a learning community. Such an approach builds upon the identity, commitment and motivation of teachers.

In a longitudinal study of teacher change and CPD, Boyle et al. (2004) found that attending a training course is still the predominant mechanism for professional development, but that there was growing recognition of other forms such as sharing good practice within schools. Indeed, whereas short courses may foster teachers' awareness for change and the need to update their competences, they are insufficient

to foster learning which fundamentally alters what or how teachers teach. Most training opportunities for teachers are characterised by 'fragmented "one-shot" workshops at which they listen passively to "experts" and learn about topics not essential to teaching' (2004, p.47); often characterised as In-Service Education and Training (INSET). Such short-term, 'spray-on CPD' (Day and Sachs, 2004, p.21) fails to change teachers' competence and practice, or their fundamental beliefs about teaching. Activities more likely to engender long-term change include more sustained learning opportunities, such as study groups, coaching and mentoring, networks involving other teachers or inquiry based learning (Boyle et al., 2004). Often informal and voluntary in nature, practitioner inquiry is on the increase, supporting teachers to be in control of their own learning (Sugrue, 2004), often in the context of communities of practice or networks (Groundwater-Smith and Dadds, 2004). Indeed, practitioner inquiry has been quite prominent in research concerning teachers' CPD over the last ten years (Avalos, 2011), suggesting a move away from INSET to more action research based approaches – as conducted in this research.

2.3.2 Teachers' professional knowledge

Cochran-Smith and Lytle (1999) differentiate teachers' professional knowledge acquired through formal training, which they refer to as knowledge-*for*-practice, from knowledge acquired from applying ideas in practice, which they refer to as knowledge-*in*-practice. They do not see a dichotomy or separation of the two epistemological stances, but rather see them as interconnected and interdependent. Moreover, the teacher who successfully leverages the two and applies what she or he has learnt in the wider context, generates a third type of knowledge that they entitle knowledge-*of*-practice.

Knowledge-*for*-practice is primarily formal or codified knowledge, representing the knowledge base that teachers acquire at university, through pre-service training or during INSET, and is typically delivered by certified trainers. It includes best practice and the 'burgeoning number of handbooks' that inform the profession (Cochran-Smith and Lytle, 1999, p.255). It is premised on the assumption that what teachers need to teach well is 'produced primarily by university-based researchers and scholars in various disciplines' (1999, p.255). Shulman (1987) suggests several categories for the typical knowledge base of teachers ranging from content (subject) knowledge and general pedagogical knowledge through to knowledge of educational values and their historical grounds. Knowledge-*for*-practice prepares teachers for familiar situations in which good teaching practice may be applied.

Knowledge-*in*-practice is derived from practical inquiry, situated learning and reflection in practice, and is embedded in the 'artistry of practice' and in teachers' 'narrative accounts of practice' (Cochran-Smith and Lytle, 1999, p.262). It assumes that what teachers need to teach well is embedded in the exemplary practice of experienced teachers and is concerned with a 'new epistemology of practice' (Schön, 1987, p.35) in which knowledge is produced in situ with its application. When teachers reflect-in-action, their thoughts influence what they are doing and reshape what the teachers are doing while they are doing it (1987). As such, it encourages experimentation and innovation. Knowledge-*in*-practice is what teachers experience in less predictable situations, when they face cognitive dissonance (Garrison, 1991), triggering inquiry learning and critical thinking.

Knowledge-*of*-practice comes from the interplay of knowledge-*for*-practice and knowledge-*in*-practice, and from the teacher connecting this to their wider context:

> In this sense, teachers learn when they generate local knowledge of practice by working within the contexts of inquiry communities to theorize and construct their work and to connect it to larger social, cultural, and political issues. (Cochran-Smith and Lytle, 1999)

Inherent in this process is metacognition and 'an understanding of one's own knowledge state' (Martinez, 2006, p.697).

The aspirational model of CPD (Day and Sachs, 2004) fosters the generation of knowledge-*of*-practice by leveraging what teachers know well already and placing them in situations where they may socially construct new knowledge with other experienced teachers; for example, experienced teachers collaborating and sharing experience with peers in a learning community. Knowledge-*of*-practice is associated with long term change and teachers' competence development.

In order to explore teachers' competence development in an online community, the term *competence* is now discussed and its relationship to cognition, attitudes and beliefs.

2.3.3 Competence development and reflective practice

Eraut (1998) reminds us that *competence* is a term used differently, by different stakeholders, according to their perspective.

> Those who like a tidy world will be disappointed to find that the usage of the term 'competence' is no less diverse than the usage of such familiar terms as 'knowledge', 'skills' and 'ability'. (Eraut, 1998, p.127)

A full discussion on this topic is outside the scope of this review, however for the purposes of this research I adopt the definition used by the European Commission (EU, 2004). My reasoning is that this represents a wide consensus amongst policymakers in Europe on the definition to be used in school education and was derived after considerable debate amongst representatives of national education ministries (EU, 2002). It is now used throughout the EU by education policymakers and teachers, guiding their understanding of the term.

> 'Competence' is considered to refer to a combination of skills, knowledge, aptitudes and attitudes, and to include the disposition to learn in addition to know-how. (EU, 2004, p.3)

For many years teachers' competence development was based on the deficit model of CPD (Day and Sachs, 2004), discussed earlier, with approaches such as competency based training (CBT) being popular. These were problematic, however, as they atomised teaching into a predictable, distinct set of competencies and failed to take account of the personalised, tailored and emotional aspects of teaching (Eraut, 1994). Schön (1987) has largely been attributed with turning attention away from the prevailing 'technical rationality' view of professional development and its positivist epistemology (Eraut, 1994; Griffiths, 2000), towards a new epistemology of practice. As well as valuing reflection-after-action, in which experience of the past influences future action, Schön (1987, p.26) emphasises the importance of reflection-in-action where 'thinking serves to reshape what we are doing while we are doing it'. This corresponds to what Garrison (1991) describes as cognitive dissonance leading to critical thinking, generating knowledge-*in*-practice (Cochran-Smith and Lytle, 1999). However, Schön's work has since been criticised (Eraut, 1995) and reinterpreted as primarily emphasising the value of metacognition, which Martinez (2006, p.696) describes as 'thinking about thinking' and the constant 'monitoring and controlling of thought'. Inherent in the process of metacognition is the need to constantly evaluate ideas for their quality in the context of the bigger picture, to have 'an understanding of one's own knowledge state' (2006, p.697) and to modify one's own learning process accordingly (Akyol and Garrison, 2011). Critical thinking and metacognition are more likely to influence attitudes, prepare the teacher for ill-defined problems of the future and lead to changes in teaching practice (Boyle et al., 2004; Eraut, 1994). They are an

essential feature of CPD aimed at competence development, as opposed to simply improving technical skills – an important distinction in the context of this research.

Reflection is now an integral part of teachers' CPD and is, for example, associated with preparing pre-service teachers to "think like a teacher" (Jay and Johnson, 2002). Zwozdiak-Myers (2008, cited in Capel et al., 2009) identifies nine dimensions of teachers' reflective practice that represent a cycle of personal action research and professional improvement. Through reflective practice, teachers are encouraged to try out new strategies and ideas in their own practice and to see the impact on their pupils' learning before finally reflecting on the implications for their own teaching practice. This learning-by-doing and reflection-in-practice is essentially what is being encouraged and supported in the eTwinning LEs.

Boud and Walker (1998) caution against an instrumental, rule-based use of reflection in professional development. Griffiths (2000) notes ironically that reflection is often carried out in a way which is both uncritical and unreflective, and Akbari (2007) laments the lack of empirical evidence of the benefits of teachers reflecting on their practice. Boud and Walker (1998) provide compelling arguments for considering the ethics of reflection and the need to ensure that the context is supportive of learners divulging their weaknesses, free from possible reprisals from managers, peers and indeed trainers whose job it is to assess them. They refer to a 'micro-context' for appropriate reflection, set within the context of practice and with the clear possibility for practitioners to act upon their reflections.

Before leaving this topic, it is worth noting that the competence that teachers need is influenced significantly by the subject matter they teach and the way in which they teach. To this end, ICT is seen as having a considerable impact on the competence that teachers need, both in terms of ICT skills and the appropriate pedagogy for its use in learning (Ala-Mutka et al., 2008). Web 2.0 and social computing has the potential to radically change the way that pupils use technology to learn (Redecker et al., 2009).

A recent peer review of the use of ICT in education and training (EU, 2010, p.32) called for more teacher training in 'advanced digital competence', on teaching pupils to use ICT critically and creatively, and on using ICT to help transform learning. The report asserted that 'teacher education has to be research based'. The competence that teachers need includes the ability to effectively organise and facilitate an online learning community of students, as described earlier in section 2.1.

Research has suggested that teachers will only employ in their teaching practice that which they believe will have a positive impact on student learning (Guskey, 2002) and this includes technology (Ottenbreit-Leftwich et al., 2010). Hence, CPD that allows teachers to experience for themselves the strengths and weaknesses of ICT and online learning is more likely to lead to their considering its use in their own teaching practice and taking appropriate decisions (Macdonald and Poniatowska, 2011).

2.3.4 Teachers' communities and networks

Professional Learning Communities (PLC) are defined as groups of stakeholders involved in learning (i.e. teachers, headmasters, etc.) working together to develop collective rather than individual knowledge, within the context of a cohesive group, according to the ethics and values that underpin teaching (Stoll and Louis, 2007). They have a shared vision and collective responsibility for improving pupils' learning; emphasise collaboration, openness and reflective professional inquiry; engender mutual trust, respect and support; and are proving to be effective at promoting systemic change in schools and education systems (Bolam et al., 2005; Vescio et al., 2008). However, there is a danger of such communities becoming too insular and 'focused only on making explicit the practical wisdom teachers already possess' (Vescio et al., 2008, p.89), if they do not take into account external perspectives such as from parents. Similarly, Grossman et al. (2000) emphasise the need for teachers' professional communities to have an outward perspective, a clear focus on students' well being and for the participants to be lifelong learners. They warn against a PLC becoming a pseudo-community in which participants 'behave as if we all agree' (2000, p.17), echoing the concerns raised earlier that communities may value consensus over differences and divergent thinking (Reynolds and Trehan, 2003).

Jackson and Temperley (2007) discuss an initiative in England connecting individual school communities in order to provide greater opportunity and scale for collaboration. Day and Sachs (2004) posit that such networks can help reduce the isolation and conservatism of individual schools. Stoll et al. (2007) take this idea further, explaining how international networks can enrich PLCs by exposing them to different ideas and different ways of thinking. Leask and Younie (2001b) describe the European Schoolnet (EUN) as such an example, initiated by the Swedish Ministry of Education and now a valuable European community for teachers.

After reviewing 11 PLCs, Vescio et al. (2008) conclude that the better performing communities are clearly focused on improving student learning and not just on collaborating. They call for PLCs to work more closely with researchers to help them

analyse and document their impact, for example via case studies – as in the case of this research.

2.4 Online learning communities for teachers' CPD – the research gap

This chapter discussed the social concept of community and how it is being applied to support collaboration, exchange of practice and social constructivist approaches to learning online in communities of practice, learning communities and networked learning. These variants have in common a *sense of community* engendered through a feeling of belonging, influence, shared resources and emotional connections (McMillan and Chavis, 1986). They differ in their focus on practice, knowledge and learning, the strength of social ties and the involvement of educators (McConnell, 2006; Dillenbourg, 2008). Focusing on learning communities, the Community of Inquiry (CoI) framework supports analysis of the learning, social and facilitation aspects in the educational experience, from the intertwined perspectives of cognitive presence, social presence and teaching presence (Garrison et al., 2000).

This chapter has also discussed how teachers' continuous professional development (CPD) is embracing a new *epistemology of practice* (Schön, 1987; Day and Sachs, 2004), through sustained cooperation between teachers in Professional Learning Communities and networks (Stoll and Louis, 2007). Emphasising collaboration and the improvement of student learning, these groups foster inquiry learning, critical thinking and metacognition – essential aspects of adult learning and teachers' professional competence development (Garrison, 1991; Eraut, 1994; Guskey, 2002).

Bringing these concepts together, the literature points to the potential for online learning communities to support teachers' CPD. Indeed some research has been carried out in this field, examining issues such as the nature of tasks that lead to collaboration (Lockhorst et al., 2010) and teachers' perceptions (Austin et al., 2010); teachers identity in online discussion forums (Irwin and Hramiak, 2010); the affordances of various CMC tools and their use to form a community in initial teacher training (Ferry et al., 2000; Hramiak, 2010); and the use of mobile learning to foster teacher collaboration (Aubusson et al., 2009). Some of this research has focused specifically on cognitive aspects and critical thinking (Szabo and Schwartz, 2011); on social presence (Lomicka and Lord, 2007); and on teaching aspects, such as the impact of online moderation (Hlapanis and Dimitracopoulou, 2007; Vlachopoulos and Cowan, 2010) and the skills that teachers need to develop (Vlachopoulos and McAleese, 2004; Macdonald and Poniatowska, 2011). Whereas the results are very valuable and will guide the use of learning communities for teachers' CPD, the

research mainly focuses on specific areas of interest and presents only part of the picture; very little research looks at the educational experience holistically.

Most research conducted thus far using the CoI framework has focused on one particular presence (Swan et al., 2008; Shea et al., 2010), 'rather than on the nature of the relationship between the types of presence' (Garrison and Arbaugh, 2007, p.167). Studies that address all three presences simultaneously are 'extremely limited, and those that do exist tend to be conducted by those who developed the framework' (Arbaugh, 2007, p.73), are focused on higher education (e.g. Perry and Edwards, 2005) and rely on data from a single source, such as online discussion transcripts (e.g Shea et al., 2010) or a participant questionnaire (e.g. McKerlich et al., 2011). Most research has been of a quantitative nature and 'The time is now right to transition to a phase that utilizes both qualitative and quantitative approaches to studying online learning communities' (Garrison and Arbaugh, 2007, p.166).

The research discussed in this thesis fills a gap by using the CoI framework in an action research project to produce a case study that considers all three presences together holistically, using mixed qualitative and quantitative data collection methods, in the domain of school teachers' CPD.

Chapter 3 Research Design

Chapter 1 sets the context for the research discussing its purpose, the domain in which it takes place and the questions that it addresses. This chapter discusses the design of the research in terms of the methodology used, the ethnographic methods employed and the approach used to analyse the data. It introduces the researcher, his experience and his philosophical stance on learning – all aspects which have an important influence on the way the results are interpreted – and describes the participants. Finally, there is a reflection on the quality of the research and the ethical approach adopted.

3.1 Research methodology

The decision on the most appropriate research methodology to use took into account the research context, purpose and questions as outlined in Chapter 1 and my philosophical stance on learning, as described below in section 3.4.2.

At the time of starting the research, the Learning Events and the eTwinning groups were a new innovation in eTwinning (see section 1.3) and the organisers (EUN) were interested to know more about how they would work and how they might be further developed. Given their interest in promoting positive change through inquiry and reflection, and my interest in understanding the community from a holistic perspective (as discussed in section 1.5), action research was the logical choice for the research methodology.

3.1.1 Action research

Action research, introduced in section 1.6, is associated with practical inquiry in which systemic study combines 'action and reflection in the intention of improving practice' (Ebbutt, 1985, cited in Cohen et al., 2007, p.297). As such, it is meant to bridge the worlds of research and practice, thereby overcoming criticisms concerning the failure of the former to influence the latter (2007). In comparing action research with the everyday reflective actions of teachers, Kemmis and McTaggart (1988, cited in Cohen et al., 2007, p.298) emphasise that action research is more collaborative and systemic; it is problem-posing as well as problem-solving; it is research done by practitioners for practitioners; and it is not 'the scientific method' applied to teaching but rather one of many possible approaches. Action research is a democratic approach to research (Day and Sachs, 2004) that encourages teachers to think of themselves as

researchers (Kincheloe, 2003), empowering them in the process (Cohen et al., 2007). In referring to this democratisation of the research process, Denscombe (2007, p.127) suggests that there is still a role for the outside expert, 'but that role shifts in the direction of mutual collaboration in the research process, or even to the position where the outside expert has the role of *facilitator* of the practitioner's own project, a resource to be drawn upon as and when the practitioner sees fit'. This describes succinctly the role that I had in working with the staff of EUN and in supporting the tutor, Tiina.

Action research is typically associated with small-scale, hands-on research in the social sciences (Denscombe, 2007) and Koshy (2010) emphasises the need for the researcher to articulate their ontological and epistemological stance in order to justify their choice of data collection and analysis methods. In this respect, I posit that it is coherent with my philosophical stance on learning, as outlined in section 3.4.2, as it rejects 'positivistic perspectives of rationality, objectivity, and truth' (Kincheloe, 2003, p.42) and is compatible with the social constructivist view of teaching, in which reality is not external or independent of the participants involved (Koshy, 2010).

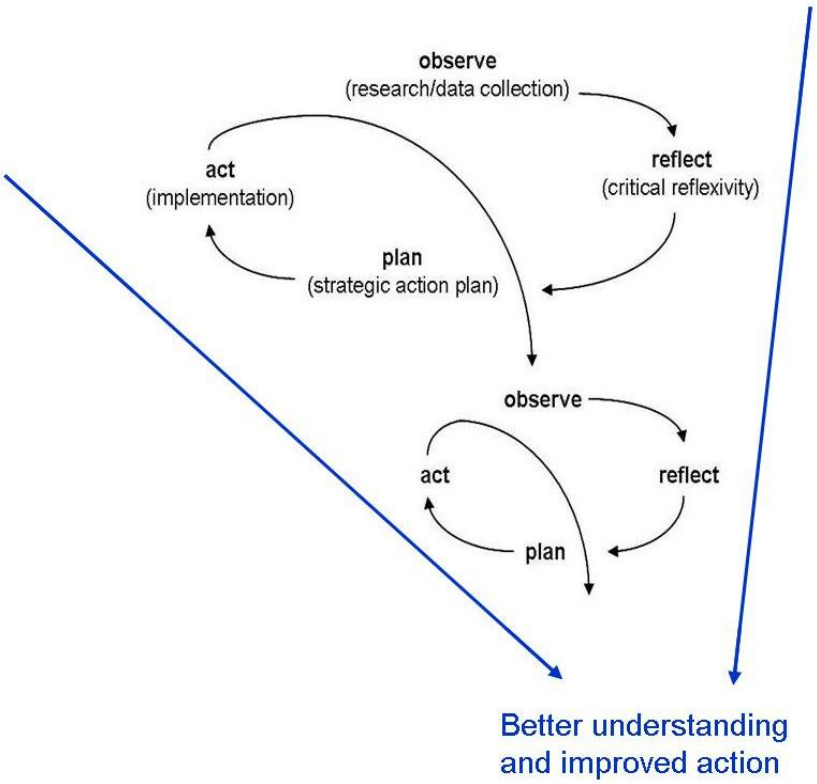


Figure 3-1 Cycles of action research (O'Leary, 2004, cited in Koshy, 2010, p.7)

Koshy (2010) describes several cyclic models of action research, such as the one proposed by O'Leary (2004, cited in Koshy, 2010), depicted in Figure 3-1. In each cycle the objective is to *observe* and *reflect* on the situation being investigated and to *plan* changes upon which to *act* in a subsequent cycle. This approach is then repeated in a spiral until there is sufficient understanding and improvement for the situation being investigated.

I participated in a first run of the Learning Event (LE), introduced in section 1.3.2, in April 2010. This was an opportunity to observe, collect data and reflect on the online learning community from the point of view of the three presences described in the CoI model. The results were subsequently analysed and discussed with the main stakeholders involved, the tutor Tiina and the staff of EUN, and planned changes were agreed that were then acted upon in a rerun of the LE in November 2010. The second LE was thus an opportunity to observe, collect further data and to analyse the possible impact of the changes made. As discussed in section 3.6.3, the two cycles of action research provided sufficient data to analyse the situation, understand the learning community and answer the research questions.

As is often the case with action research (Koshy, 2010), the results offer a rich, in-depth description of a specific example of a more general concept; in other words they present a case study.

3.1.2 Case study

A case study is a specific, bounded example of a more general situation, described in sufficient detail and depth as to allow others to identify with the case (Cohen et al., 2007). It is concerned primarily with the exploratory questions of how and why, rather than the more typical research questions of what and where (Yin, 2009). It is 'the study of a singularity which is chosen because of its interest' (Bassey, 1999, p.75) and aims to 'illuminate the general by looking at the particular' (Denscombe, 2007, p.36). Simons (1996, online) describes this as 'the paradox of the case study', yielding both unique and universal understanding.

A case study follows the interpretive tradition of research, recognising the 'complexity and 'embeddedness' of social truths' (Cohen et al., 2007, p.256) and as such, it is coherent with the philosophical stance of this research (see section 3.4.2). Denscombe (2007) suggests that the situation being examined – the 'case' – typically exists prior to the investigation and continues to exist afterwards, as with the LEs being investigated in this research.

A case study does not have specific methods of data collection and analysis associated with it (Bassey, 1999) and the next section discusses how ethnographic approaches were used to collect appropriate data.

3.2 Research methods

Referring to the work of LeCompte and Preissle (1993), Cohen et al. (2007, p.169) describe ethnographic approaches as being 'concerned more with description than prescription, induction rather than deduction, generation rather than verification of theory, construction rather than enumeration, and subjectivities rather than objective knowledge'. As such, they are appropriate for the collection of data for action research.

Several ethnographic methods were used to collect the data from multiple perspectives and to support cross-referencing and validation through triangulation. Using mixed methods increases one's confidence that the data collected does not represent a single distorted or biased view of the case (Cohen et al., 2007). Whilst not proving that the researcher 'got it right', they do help to reduce the possibility of error and improve consistency (Denscombe, 2007, p.138).

Triangulation in this research involved the collection of both quantitative and qualitative data, via different methods, according to participants' perceptions and actions online, and at various times throughout the LEs.

3.2.1 Overview of data collected and methods used

The following sections review the data collected in the two cycles of action research and the methods used, as summarised in Table 3-1. The use of these methods is further discussed in section 8.2.3.

First cycle of research

No data were collected during the 11 days of the first LE, as I decided that it was best not to participate during the first cycle of research, but rather to observe and learn.

Once the LE had finished, I was interested in knowing the participants' perceptions of the LE concerning their competence development and online collaboration, social issues and the development of the community. I wanted to have a broad perspective

and was not ready to go into specific details, so I decided to use a questionnaire. The questionnaire was made available to all participants, as discussed further in section 3.2.2.

Second cycle of research

For the second presentation of the LE, we introduced a number of changes based upon my analysis of the first cycle of research (see Chapter 5). Therefore I wanted to know how the revised LE compared with the first, again in terms of competence development and online collaboration, social issues and the development of the community. I also wanted to know more about the influence of the tutors and peer support (collectively termed teaching presence in the CoI framework). Consequently I again solicited the views of the participants via a questionnaire, using questions very similar to those used after the first LE in order to facilitate a comparison. The questionnaire was addressed to all participants, as discussed in section 3.2.2. During the process of analysing the results, it became clear that I had not checked the participants' understanding of the term *competence*. Given the importance of this for my interpretation of the results, I decided to launch a supplementary questionnaire to complete the picture. This was addressed to all those who had replied to the initial questionnaire with email address, allowing me to re-contact them.

Analysis of the first LE raised some interesting results concerning the expectations of the participants, see Chapter 4. Consequently I wanted to see whether the expectations of the participants for the second LE were similar and how their final experience actually compared with these expectations. In order to achieve this, I decided to conduct interviews with a few participants who had volunteered to be interviewed before the event started, and then again after the event had ended. I also used the second interviews to ask participants about their opinion of some of the innovations introduced in the second LE.

The interviews presented a useful insight into the perception of the interviewees concerning their cognitive development. I decided to investigate the online discourse in order to look for evidence to substantiate their views. Moreover, I was interested to know more about the social and teaching presence of the participants, according to the CoI model (Garrison et al., 2000). In order to achieve this, I coded the messages from all the discussion forums of those interviewees who had been active in the final activity. This process is further discussed in section 3.2.4.

Description	Method	Means	Date	Sample size	
				Contacted	*Replies*
First cycle of research, LE 1 (11 days, 12-22 April 2010), n=156					
After the LE					
Participant opinions	Final questionnaire	Online	01.05.2010-07.05.2010	156	128 (82%)
Second cycle of research, LE 2 (34 days, 25 October – 27 November 2010), n=142					
Before the LE					
Participant opinions	Interviews	Email	23.10.2010 - 28.10.2010	142	43 (30%)
		Skype ®	24.10.2010		9 (6%)
During the LE					
Participant messages in forums	Coding	Extraction staff room	25.10.2010 - 27.11.2010 (examined 03.2011 - 08.2011)	142 (100%) (1171 messages)	
		Extraction all forums		7 [a] (5%) (344 messages)	
After the LE					
Participant opinions	Final questionnaire	Online, part 1	26.11.2010 - 06.12.2010	142	82 (58%)
		Online, part 2	22.08.2011 - 11.09.2011	46 [b]	25 (54%)
Participant opinions	Interviews	Email	21.12.2010 - 04.01.2011	52 [c]	10 (19%)
		Skype ®	14.12.2010 - 22.12.2010		7 (13%)

Table 3-1 Overview of data collected and the methods used in the research

a = participants who had been interviewed after the 2nd LE and were active in the final activity

b = participants who responded to part 1 of the questionnaire and gave their email address

c = participants who had been interviewed before the 2nd LE

With the exception of the message coding, the data for the research was collected from participants who volunteered. Hence the samples were self-selecting and represent a cross section of the participants described further in section 3.5.

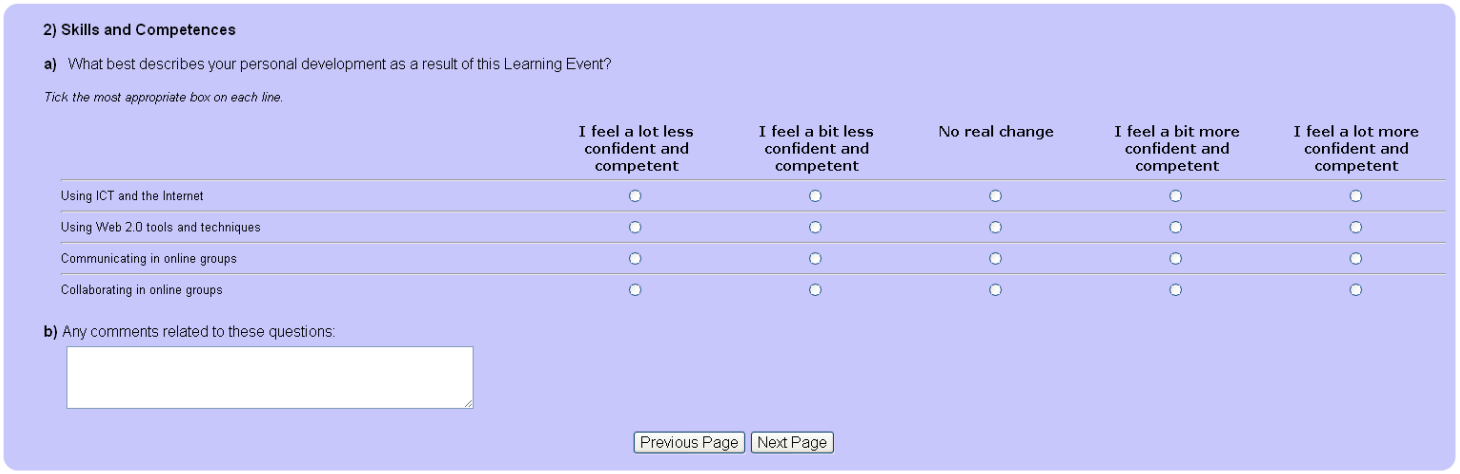
3.2.2 Online questionnaires

Questionnaires were used to solicit participants' perceptions after both LEs, using the online service FreeOnlineSurveys.com. The website allows users to create simple surveys and offers basic tools to analyse and present the data. By paying a small fee, I was able to have a more extensive survey and to download the data to my computer for subsequent analysis. One advantage of using such a tool is that users may reply anonymously.

Participants were invited to respond to the online questionnaires via links provided in the standard satisfaction surveys that the LE organiser (EUN) conducted after each LE. The questionnaires contained both closed and open questions addressing the cognitive, social and teaching aspects and started with an ethical statement, as discussed further in section 3.7.2. Refer to Table 4-1 in Chapter 4 and Table 6-2 in 5.3 for a summary of the questions asked after the first and second LE.

Five point Likert scales were used for the questions soliciting participants' perceptions, as in question 2a illustrated in Figure 3-2 which asks respondents the extent to which they feel more confident and competent in a particular topic. Likert scales are uni-dimensional and represent probably the most relevant scale for measuring attitude patterning (Oppenheim, 1992).

For questions relating to issues of a more subjective nature, where I did not wish to influence the result by suggesting a single correct answer, two equally plausible scenarios were presented and respondents were asked with which they preferred or agreed most. Such questions were based on a semantic differential scale, which normally uses two opposing adjectives at either of the scale and provides the opportunity to 'fuse measurement with opinion, quantity and quality' (Cohen et al., 2007, p.327). They yield subjective rather than objective answers, where the difference between the two scenarios is more important than an absolute rating (Oppenheim, 1992). For example, as in question 3a illustrated in Figure 3-3, which shows a question asking respondents whether they mainly learnt on their own or with others.



2) Skills and Competences

a) What best describes your personal development as a result of this Learning Event?

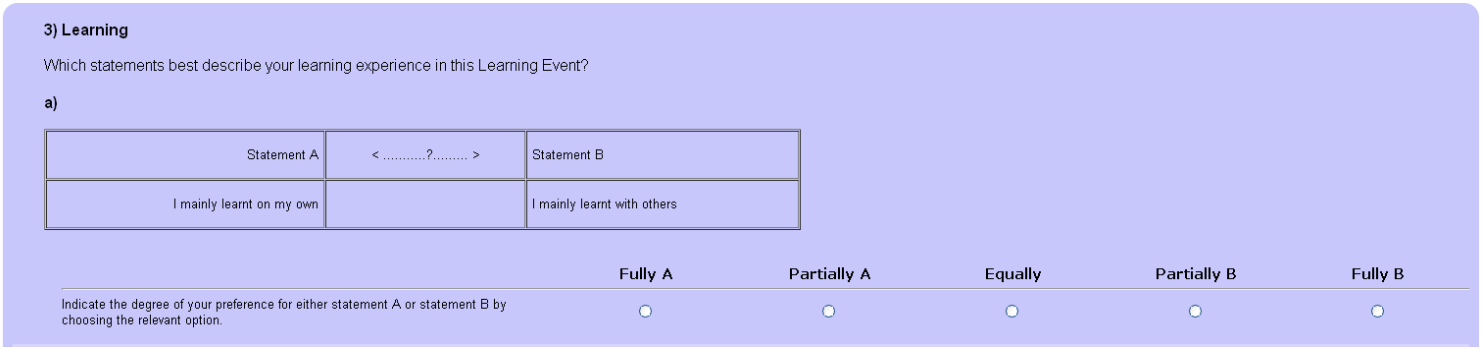
Tick the most appropriate box on each line.

	I feel a lot less confident and competent	I feel a bit less confident and competent	No real change	I feel a bit more confident and competent	I feel a lot more confident and competent
Using ICT and the Internet	○	○	○	○	○
Using Web 2.0 tools and techniques	○	○	○	○	○
Communicating in online groups	○	○	○	○	○
Collaborating in online groups	○	○	○	○	○

b) Any comments related to these questions:

Previous Page Next Page

Figure 3-2 LE2 questionnaire, Q2, illustrating use of five point Likert scale



3) Learning

Which statements best describe your learning experience in this Learning Event?

a)

Statement A	< .....?..... >	Statement B
I mainly learnt on my own		I mainly learnt with others

	Fully A	Partially A	Equally	Partially B	Fully B
Indicate the degree of your preference for either statement A or statement B by choosing the relevant option.	○	○	○	○	○

Figure 3-3 LE2 questionnaire, Q3, illustrating use of questions based on semantic differential scale

On occasions where I invited respondents to put a series of answers in order of preference, a ranking system was used where respondents were asked to rate three answers from 1 (most important) to 3 (least important) using drop down boxes.

Several classification questions were also asked in order to know, for example, the age, gender and origin of the respondents. As Oppenheim (1992) suggests, these questions were located at the end of the questionnaire in order to give the respondent time to see that the inquiry was genuine and of interest to them, before being asked to provide personal details. Whereas the questionnaires were billed as anonymous, respondents were invited to give their name – this was clearly indicated as optional and, as shown in Chapter 4, most respondents did indeed offer their name.

Section 3.3 describes how the quantitative and qualitative data were analysed, and reliability and validity are further discussed in section 3.6. Chapter 8 includes a reflection on the use of questionnaires in this research.

3.2.3 Interviews

Interviews were conducted with a few individuals before the second LE started and then again after the event had finished. The interviews were semi-structured, in that they addressed common topics and sets of questions, however the answers and the way the discussion went was dependent on the interviewee (Roulston, 2010). For the oral interviews, general open questions were used to start the discussion and to establish a rapport with the interviewee. They were followed by the more structured questions, asked of all interviewees in order to facilitate a comparison of responses, and probing questions to test my understanding and to encourage the interviewee to go into further detail. Finally, there was often a general discussion in which the interviewee was encouraged to talk about their experience and to expose points that had not yet emerged.

In order to solicit volunteers for the first interviews, an invitation was included in the registration process for the LE, conducted by the organisers EUN in October 2010. I subsequently contacted those who volunteered by email to confirm their agreement to being interviewed, in English or French. Of those that replied positively, many preferred to answer questions via email for reasons of convenience or because they did not feel comfortable being interviewed orally. The remainder were interviewed orally by Skype ® and the conversations were recorded, with their permission, and

stored in my research archive as MP3 files. The data were analysed as described in section 3.3.

A similar process was followed for the interviews held after the second LE. All those who participated in the first interview were contacted by email to ask if they would agree to be interviewed again. Of those that responded positively, some preferred to provide answers via email whilst others were interviewed via Skype ®. Further details, including the specific questions asked in the interviews and the analysis of the data, are discussed in section 6.3. Chapter 8 includes a reflection on the use of interviews in this research.

3.2.4 Online message coding

Content analysis was undertaken on some of the forum messages in order to look for further evidence to support the perceptions of the participants, as had been expressed in the questionnaire and interviews. Content analysis aims to 'reveal information that is not situated at the surface of the transcripts' (De Wever et al., 2006, p.7) and is further discussed in section 2.2.

The data were analysed using the coding schemes proposed for the three presences in the Community of Inquiry model (Garrison et al., 2000) which have their roots in Henri's (1992) work; namely cognitive presence (Garrison et al., 2001), social presence (Rourke et al., 2001a) and teaching presence (Anderson et al., 2001). The process of analysis is discussed in the next section.

In order to target my analysis, attention was focused on two sets of data:

a) a quantitative analysis was undertaken of all the messages in the staff room, to see whether their distribution over time would bear any relationship to that of the tutor/facilitators' messages and the timing of the LE activities.

b) a qualitative analysis was undertaken of the messages from all forums, of a subset of seven of the participants who had been interviewed at the end of the LE and were active in the final reflection activity. This focused on the development of their cognitive, social and teaching presence during the LE.

A unit of analysis was used that corresponds to the message, assigning the most appropriate code for each presence taking into account the history of the discussion

and the apparent stage of development of the person (Garrison et al., 2001). Reliability and validity are further discussed in section 3.6. Chapter 8 includes a reflection on the message coding, including the decisions on the unit of analysis.

The next section discusses the process used to analyse the data.

3.3 Data analysis process

The data were stored in the research archive and analysed according to its nature – qualitative or quantitative.

3.3.1 Qualitative data

The qualitative data from the questionnaires, relating to the open questions, was mostly analysed with the support of the online questionnaire tool (see section 3.2.2) and Excel. The data were used to provide further explanation of the quantitative results and relevant citations were extracted and used in the presentation of findings given in Chapter 4 and Chapter 6. The remaining qualitative data - from the questionnaire on competences, the interviews and online messages - were analysed with the support of a Computer Assisted Qualitative Data Analysis Software (CAQDAS) called ATLAS.ti. Before analysis, the recordings from the interviews were transcribed and stored in an Excel spreadsheet, along with the answers received by email. The transcribing process is further discussed in Chapter 8.

Coding the data for analysis

Whereas the CAQDAS tool facilitates the storage, coding and retrieval of data, it does not *do* the analysis (Denscombe, 2007). Two approaches were followed for manually coding the data (Cohen et al., 2007, p.493):

Open coding	The definition of the codes emerges from the coding process itself, *in vivo*, through a cycle of inspecting the data; identifying clusters of commonalities; allocating key words or codes which describe the themes; merging, separating and renaming themes until a practical list of codes is derived.

Open coding was used in the analysis of some answers to semi-structured questions in the questionnaire and in the analysis of interview responses. See sections 6.2 and 6.3.

Selective coding — The definition of the codes is predefined, according to some underlying theory or model.

Selective coding was used to classify the messages in the discussion forums, according the coding schemes proposed for cognitive, social and teaching presences in the CoI framework (Garrison et al., 2000). See section 7.2.

The process of coding using the CAQDAS is illustrated in Figure 3-4, which shows the coding of answers to the questionnaire after the second LE (see section 6.2.7). Chapter 8 includes a reflection on the message coding.

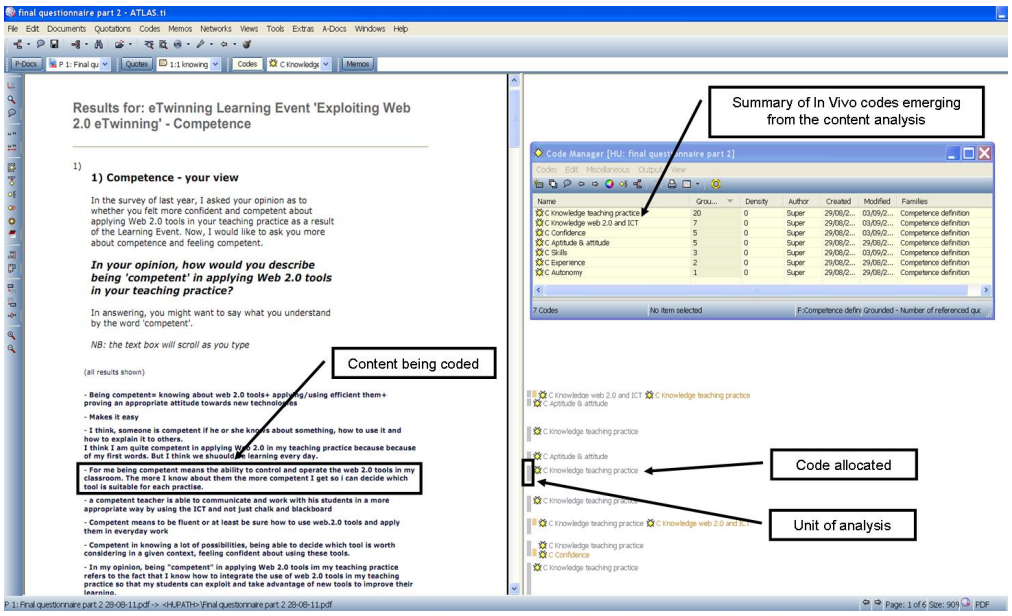


Figure 3-4 Illustration of the coding process using the CAQDAS tool, Atlas.ti

3.3.2 Quantitative data

Quantitative data from the online questionnaires were exported to an Excel spreadsheet and analysed using the tool, presenting the results as tables and graphs. In addition, the data analysis tool associated with the questionnaire tool (see section 3.2.2) was used to visualise the results.

In order to analyse the distribution of participant and tutor messages in the staff room over time, they were coded in the CAQDAS accordingly and the number of messages per day was calculated. This was then plotted against time, using an Excel spreadsheet, and the resulting graph imported into the presentation tool PowerPoint, so that information concerning the timing of the various cognitive activities could be superimposed. The results are illustrated in Figure 7-1 and discussed in Chapter 7.

3.4 The researcher

As previously mentioned, the researcher needs to articulate his or her ontological and epistemological stance in order to justify their choice of data collection and analysis methods (Koshy, 2010). This section discusses my role as a researcher and my philosophical stance on learning.

3.4.1 Researcher's role

The researcher's role is to observe, analyse and interpret what is happening, collecting data using mixed ethnographic methods. In such a scenario, the researcher is not an unbiased, impartial actor, detached from the social setting being analysed. On the contrary, she or he is constructing their own understanding of the situation by communicating with people in the educational setting (Koshy, 2010).

> As researchers, the meaning we attach to things that happen and the language we use to describe them are the product of our own culture, social background and personal experiences. Making sense of what is observed during fieldwork observation is a process that relies on what the researcher already knows and already believes, and it is not a voyage of discovery which starts with a clean sheet. (Denscombe, 2007, p.68)

In conducting ethnographic research, the researcher is also influencing the situation being analysed. Hence, it is important that his or her philosophical stance on learning is coherent with the research approach and with the general situation being examined. Reflexivity is an important aspect of action research and qualitative data analysis (Cohen et al., 2007; Koshy, 2010; Roulston, 2010). Moreover Denscombe (2007, p.69) advocates that this should not be just a private affair, 'there needs to be a public account of the self which explores the role of the researcher's self'. Reflexivity in the context of this research is further discussed in Chapter 8.

3.4.2 Researcher's experience and philosophical stance on learning

My view of learning, and how I might influence and interpret the things that I am researching, is heavily influenced by the experience that I have had with technology enhanced learning (TEL) as a tutor, a student and in my daily work.

As a tutor with Open University Business School in the late 1990s, I experienced the introduction of software called Lyceum that allowed tutors to hold tutorials online. Rather than travelling considerable distances across borders to meet physically in the Netherlands, the students and I were able to interact online and share resources at a mutually convenient time. Moreover, two outlying students – from Africa and Canada – who would not normally have been able to attend physical meetings were able to participate in their first-ever tutorials. The online tutorials clearly added value under some circumstances, however they were introduced in the MBA course as a replacement for the physical meetings and this was strongly opposed by the students. Moreover, the tutorials took a long time for me to prepare and I was not sufficiently organised for the first session, having failed to clarify the basic rules for interaction. Through this experience, I learnt that TEL should be seen as an additional resource for learning and not necessarily as a replacement for what already works well. I saw the importance for students of having effective social contact and I also appreciated the need for tutors to be competent in managing online collaboration in groups.

As a student on the doctoral course of which this research is part, I have experienced the value for distance learners of keeping in contact socially, via Facebook® and Skype®, to the extent that I believe our cohort of distance students has stronger ties and closer relationships than we see amongst the on-campus PhD students[6]. Moreover, through an exercise that we did involving collaborative project work on a wiki, I experienced the frustration of using online tools which do not have sufficient social affordances to support rapid, informal discourse. It was only when we started to use Skype ® in parallel that we really commenced working effectively as a group (Zenios and Holmes, 2010).

Through my daily work at the European Commission on EU funded TEL projects, firstly under the Framework Programme for Research and later under the eLearning and Lifelong Learning Programmes, I have witnessed significant changes over the last

[6] We witnessed this at our first residential at Lancaster University, where the group of on-campus PhD students that we met clearly did not know one another as well as we knew each other.

18 years. Online learning has become more social, the underlying pedagogy has become more innovative and the support for learners has become more effective. I have seen how the integration of social computing has reconnected learners, in more realistic social settings. Moreover, I have seen a paradigm shift in the way online learning is designed and implemented, with leadership moving from the software engineers in computer research laboratories, towards the educators in schools, colleges and company training departments (Laurillard, 2008).

The increased involvement of educators, a transformation of the underlying learning process and a better understanding of TEL's contribution to learning are now helping to drive fundamental changes in online learning. My interests lie precisely at this cross-roads of technology, pedagogy and social connectivity, in online communities where I see an important role for educators when such settings are used for learning.

I perceive learning as a process in which one creates knowledge by actively interacting with one's environment, developing an interpretation and understanding based upon current and past experience, and in relation to one's fundamental values and beliefs. I do not see learners as passive receptors of predefined knowledge. In this respect, I associate with some of the basic ideas of Piaget (cited in Mooney, 2000). On the other hand, I am not a *radical constructivist* (O'Connor, 1998) believing that everything that we know must, by definition, be different. Nor do I believe that all knowledge is subjective (for example, scientific knowledge), or that learning is purely an individual affair. Indeed, learning is heavily influenced by and dependent on the social context in which it takes place.

As adults, we may learn new things by researching, reading and interacting with content and - if it is well written - we will acquire new information. However, to have new knowledge we need to apply the information in real contexts and adjust our understandings based upon our experience. Moreover, true understanding comes from exploring and testing our interpretations with others, through social interaction and social practice – what Lave and Wenger (1991) describe as *situated learning*. In this respect, I have been influenced by my experience as an apprentice at British Aerospace where I spent periods in several departments of the aircraft manufacturer working with skilled craftsmen and professional experts. There, I experienced first-hand the value of being a reflective practitioner (Schön, 1987), the positive influence of working closely with more experienced, mature experts (Vygotsky, 1978) and the influence of cultures, both social and organisational.

My belief is that learning which takes place in groups is more than just individual learning benefiting from a shared social setting. As Stahl succinctly explains:

> It is true that only individuals can interpret meaning. But this does not imply that the group meaning is just some kind of statistical average of individual mental meanings, an agreement among pre-existing opinions, or an overlap of internal representations. … It is not necessarily reducible to opinions or understandings of individuals. (Stahl, 2005, p.80)

Individually learning and informal learning in groups, such as CoP, certainly have their value. However, if the main focus is to learn, to be educated, then I believe that guidance and support can be essential. In this respect, I agree with the concerns of Pedlar (1981) on the liberating structure, with Boud (1988) on the need to lead learners to autonomy and with Hargreaves' (1998) description of teaching as an emotional practice.

In short, my philosophical stance on learning is one of social constructivism, emphasising the value of collaboration and social discourse, both for the individual learner and for the group as a whole, and with appropriate guidance and support when the primary focus is on purposeful learning.

3.5 The participants

The participants in eTwinning are typical primary and secondary school teachers from across Europe who volunteer to work, collaborate and learn together because of their interest and without financial incentive (see section 1.3.1). They do so in addition to and as part of their everyday teaching, often as individual teachers but sometimes with other teachers from the same school. They participate in individual LEs because they are interested in learning more about the topic, they want to improve their teaching, they wish to meet other school teachers and they want to practice a foreign language (eTwinning, 2009). The possibility to receive a certificate upon successful completion may also be a motivating factor.

For the first LE, 156 school teachers started and 110 (71%) finished with a certificate for successful completion. For the second LE, 142 school teachers started and 108 (76%) finished with a certificate for successful completion. The participants of the two LEs are different apart from one teacher, Lenuta from Romania, who is involved

in both. Chapter 4 and Chapter 6 present further information about the actual participants who took part in the two LEs.

As discussed in the previous sections, the data were collected from participants who volunteered to respond to the online questionnaire (both LEs) and who indicated their willingness to be interviewed (second LE). The subset of participants used for the online message coding was chosen from those who had given their consent and were active until the end of the LE (see Chapter 7 for further details). In all cases, explicit consent was obtained before data were collected; discussed further in section 3.7.2 concerning the ethical approach.

3.6 Research quality and limitations

The quality of research is influenced by the reliability, validity and the extent to which the findings may be generalised (Creswell, 2009). Reliability and validity are discussed in the following sections, together with the steps taken to assure research quality. The generalisation of the results is discussed in the final section concerning the limitations of the research.

3.6.1 Reliability

Reliability is concerned with the degree of consistency (D. E. Gray, 2004). This includes, for example, the extent to which the same researcher would observe the same results on different occasions (Hammersley, 1992, cited in Silverman, 2006). The potential for differences in observation between different researchers, called inter-rater reliability in content analysis (Rourke et al., 2001b), does not concern this research as all findings were interpreted by a single researcher.

Reliability is ensured in the *questionnaires* by employing a limited number of question styles, by using good practice (such as Likert scales) with clear instructions and by using tried and tested software to collect and analyse the results, as discussed in section 3.2.2. Moreover, the questionnaires were piloted several times before use; both with a friend (for proof reading and general comprehension) and with the LE tutor (who checked terminology, made suggestions to make the wording culturally neutral and who completed the questionnaire as a teacher). The fact also that the majority of respondents offered their name in their replies helped to ensure reliability when it came to cross-referencing the results with those obtained via other means (see *triangulation* in the next section). The data, once stored in Excel, was sorted and

cleaned to remove incomplete entries and duplicates from the same person (where two replies were made, the last complete reply was used). Theoretically it was possible for a respondent to provide several replies but with different personal data, however, this is highly unlikely to have happened.

Reliability is ensured in the *interviews* by having a common structure and approach: with the same set of pre-defined questions to scaffold the discussion; with the researcher using careful prompting and avoiding offering his own opinion; and by piloting the questions with someone outside the sample, in order to check comprehension and avoid ambiguity (Oppenheim, 1992). Concerning the last point, the reliability of the responses provided via email, rather than orally, has the potential to be lower. Nevertheless, had a reply by email been ambiguous, I would have followed up with a further email for clarification, however this proved not to be necessary.

The process of analysing the qualitative replies in the questionnaires and the interviews involved in vivo coding the data into clusters, as discussed in section 3.3.1. Reliability was ensured, as best as possible, by reading the data several times, in context, before allocating codes and by carrying out this process over a limited timeframe to ensure consistency of interpretation. It was also possible to cross-reference the quantitative replies of respondents to their qualitative answers (see *triangulation* in the next section).

Reliability is ensured in the *coding* of the online messages from the discussion forums by using the coding schemes proposed for the CoI framework, as discussed in section 3.2.4. These coding schemes offer indicators for the interpretation of the cognitive, social and teaching presences. Moreover, the choice of the message as the unit of analysis (see section 3.3.1) will allow other researchers to more easily reproduce the findings. Further reflection on the coding process is provided in Chapter 8.

Reliability was further enhanced through occasional discussions on the findings with the tutor, Tiina, via Skype or email. We compared what I was observing and analysing through the data with what she was noting from her involvement in the LE. This helped us to align our strategy for remaining activities, for example, we decided on how best to structure the final reflection activity after a discussion on what we had observed up until approximately half-way through the second LE. Similarly, at key points in my analysis I produced brief reports summarising the findings which I sent to Tiina and the staff of EUN for comment. Occasional meetings were held at EUN's

offices in Brussels to discuss the results and to obtain their opinion on the research so far.

3.6.2 Validity

Validity is associated with the truth (Silverman, 2006) and may be considered to be one of the advantages of qualitative research as 'it is based on determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers of an account' (Creswell & Miller, 2000, cited in Creswell, 2009, p.191).

Validity in this research is assured through several actions:

- Triangulation

  As discussed in section 3.2, mixed ethnographic methods were used to cross-reference the data collected. The coding of the online messages was compared against the participants' perceptions as expressed in the interviews to find evidence to confirm or disagree with their views. The quantitative answers in the questionnaires were compared with the more open qualitative answers to add depth and help ensure coherence in the results. It was also possible to cross reference data from the questionnaire for some participants, when they had volunteered to include their name. The opinions expressed in the first interviews were recited back to the interviewees in the second interviews to remind them of what they said and to offer them the opportunity to correct my interpretation.

- Using participant feedback

  Feedback from the participants on the first questionnaire was used to fine-tune and correct, where necessary, the questions in the second questionnaire. This helped to ensure that they interpreted the questions as intended.

- Reflexivity and flexibility

  The tutor Tiina and I regularly exchanged views via email on how the second LE was progressing. We also held discussions online, using Skype ®, from time to time to compare observations and interpretations, and agree a common strategy for our tutoring. Tiina was acting as both a fellow researcher and critical friend (Costa and Kallick, 1993). Progress was also discussed periodically with the staff of EUN

at their offices in Brussels. Such discussions helped to ensure the action research remained democratic, with shared goals between all the stakeholders.

The action research approach was flexible and took account of the results as they emerged, in order to take appropriate action or change course as necessary. For example, the tutor and I decided on the design for the final reflection activity partway through the second LE based upon our observations. Ongoing reflexivity in my public blog helped to ensure that the research was perceived as trustworthy, authentic and credible. A supplementary questionnaire was launched after the second LE to ask participants for their interpretation of the term *competence*, once it became clear in the analysis that I had overlooked this aspect (see section 6.2).

- Validated coding schemes and theoretical framework

The schemes used for the coding of online messages have been validated in other research and are associated with the CoI framework, itself a model that has been validated in many studies (see section 2.2). This helps to increase the credibility of the research, reduce the criticism of researcher bias and help with the generalisation of the results (see the next section).

Further reflection on the validity of the research is provided in Chapter 8.

3.6.3 Research limitations

Cohen et al (2007) suggest that a case study is a specific, bounded example of a more general situation, described in sufficient detail and depth as to allow others to identify with the case. This research presents a case study of a specific LE from which the results may be generalisable to other similar examples of LEs; section 8.2.4 proposes a model for future LEs that emerges from the research. Beyond eTwinning LEs, however, the results may not be generalised or simply replicated in other situations, for this would be inconsistent with the philosophical stance with which the research was conducted; namely that learning occurs in unique social settings influenced and determined by the participants involved. Rather, the aim of the research is to contribute to the ongoing discussion on the use of online communities in education, providing sufficient context and analysis for the reader to be able to understand and apply the results in a way that they interpret as being appropriate to their situation.

The results are interpreted and analysed by a single researcher. Therefore, as with all small-scale action research, the analysis could be accused of being subjective.

However, such criticism needs to be seen in the context of the steps taken to assure the reliability and validity of the findings, as discussed in the previous section. Moreover, the criticism needs to be balanced against the advantages that this type of research offers in terms of unique insights into complex social situations (Denscombe, 2007), of bringing the story to life (Koshy, 2010) and of being able to get to the heart of questions such as 'how?' and 'why?' phenomenon occur (Yin, 2009).

The action research is limited to two cycles of investigation and to a single LE on Web 2.0. Similarly, the data collection is limited to that which proves to be necessary to yield valuable results. This is consistent with the scope of the thesis and the involvement of a single researcher. Nevertheless, the potential for further investigations of a similar nature is identified and discussed further in Chapter 8.

3.7 Ethical approach

Badger (2000, cited in D. E. Gray, 2004, p.388) suggests that action research should, in principle, pose few ethical dilemmas as it is 'based on a philosophy of collaboration for the mutual benefit of researchers and participants'. That said, action research involves researchers working closely with the participants as equals and it is incumbent upon the researchers to keep secure and confidential any information which is obtained through this trusted relationship. Before each LE, prior notice was given to participants of how this research would be conducted with the option to indicate that their data should not be used or to raise any other concern that they may have had, see section 3.7.2.

3.7.1 My role

Participants of the first LE were informed that I would be observing the event and, like other participants, I provided a profile of myself in which I explained who I was, what I was doing and how they could find further information through my blog; as illustrated in Figure 3-5. Similarly for the second LE, as an active participant I was involved in the welcome session and introduced myself as a facilitator on the welcome page of the staff room (see Chapter 5).

In introducing myself, it was important to indicate that I was both a part-time researcher at the University of Lancaster and an employee of the European Commission, which funds the eTwinning initiative. By being fully open and transparent about my role, I aimed to avoid any misunderstanding about my

professional links with the organisers, EUN, and concerns about a possible conflict of interest. Prior approval to conduct the research was obtained from my employer and from EUN, using a standard procedure put in place to authorise research in eTwinning.

3.7.2 Participant consent and anonymity

The online questionnaires (discussed in section 3.2.2) started with an ethical statement which described the objective of the surveys, explained how the data would be treated and asked for their explicit consent. Respondents had to confirm their consent before they could continue.

Figure 3-5 My profile as seen by participants of the LEs

For the second LE, where I intended to analyse data obtained during the event, participants' prior consent was explicitly sought during the registration process, via

the organisers EUN. As a result, 190 (90%) of the 211 participants who registered gave their permission. For those that did not consent, their data has not been used except for overall statistical purposes. The registration process also solicited volunteers for the interviews and their consent was confirmed by email, when organising the discussions. During the course of the LE, no participant raised concerns about my research, neither with EUN, the tutor, the university nor myself and no one asked to withdraw their consent.

In order to cross-check data in the research archive, id codes were allocated to all participants who registered for the second LE, from 1 to 211. When presenting the data, for example via screenshots or in citations, anonymity is ensured by either redacting personal information, as illustrated in Figure 1-2, or by using a pseudonym. Each pseudonym is unique, preserves the gender and country of origin of the participant and always corresponds to the same person. Several websites were used to find appropriate names, including:

http://www.20000-names.com
http://www.girlnames.com/turkishgirlnames.html
http://babynamesworld.parentsconnect.com

3.7.3 University ethics approval

The research has been carried out in conformance with the university's ethical code of practice (Lancaster University, 2009). Full, prior ethical approval was received from the university on 30 April 2010.

3.8 Summary

This chapter discussed the design of the research in terms of the methodology used, the ethnographic methods employed and the process used to analyse the data. It introduced the researcher, his experience and his philosophical stance on learning and described the participants. Finally, there was a reflection on the quality of the research and the ethical approach adopted.

The following chapters present the results and discuss the findings from the two cycles of research, starting with the first LE.

Chapter 4 Research Findings from the First Cycle: Participants' Perceptions

This chapter presents the findings from the first cycle of research that concern participants' perceptions of the first of the two Learning Events (LEs). The data were collected through a participant questionnaire and complemented by observations of the online discourse. The findings are summarised in section 4.2 and subsequently discussed in Chapter 5.

For the first LE, 156 school teachers started in the welcome activity and 110 (71%) successfully finished obtaining a certificate for successful completion (Sarisalmi, 2010a).

4.1 Questionnaire and my observations

The questionnaire was made available to all participants for one week between 1 and 7 May 2010. It contained both structured and open questions, as discussed in section 3.2.2 and summarised in Table 4-1 below.

4.1.1 Questionnaire respondents

There were 128 useable replies received for the questionnaire, representing 82% of the 156 school teachers who started the event. Of these, 80 participants (62%) volunteered to give their name and email address for further interviews and research. Note that it is not possible to ascertain precisely what percentage of the participants who successfully completed the event responded to the questionnaire as participation was anonymous.

Of those respondents who provided personal details (110 of the 128, see Table 4-2) most were female (91%) and represented 25 nationalities (of which 4 held dual nationalities). For the majority (51%) this was not their first LE and most considered themselves to be experienced eTwinners (53%).

The gender of participants was not recorded explicitly during the registration process by the LE organisers, EUN. However, the names of the participants suggest that the clear majority were female. The gender balance of the respondents to the questionnaire appears to be similar to that of the LE in general. The issue of gender balance is further discussed in section 8.2.3.

N°	Question description	Question type
1.	Consent *Asks respondents to confirm their consent*	*Yes/No*
2.	Skills and competences *Asks respondents whether they feel less or more confident and competent as a result of the LE for a range of activities including communicating and collaborating online*	*5 point Likert scales*
3.	Learning *Asks respondents what best describes their learning experience in the LE in terms of learning on their own or in groups, etc.*	*5 point Likert scales*
4.	Dialogue *Asks respondents about their preferences for posting messages and giving feedback*	*Preference rating choices*
5.	Community *Asks respondents about collaboration and the development of relationships and community*	*5 point Likert scales*
6.	Social aspects - personal details and contacts *Asks respondents whether people were able to get to know one another, whether social contact was important and about the use of the profile pages*	*5 point Likert scales*
7.	Social aspects - friendships *Asks respondents whether they liked meeting new people, about interaction and making friends*	*5 point Likert scales*
8.	Personal details *Asks respondents to provide a few demographic details, to give their name and their email address if they volunteer to be interviewed*	*Yes/No and open*
9.	Feedback *Invites respondents to give feedback on the questionnaire*	*Open*

Table 4-1 First LE, summary of questions in the questionnaire

	N° respondents	
First Learning Event in which they participated	54	(49%)
Native English speaker	3	(3%)
Experienced eTwinner	58	(53%)
Number of respondents to above questions	*110*	*(100%)*
Female	99	(91%)
Male	10	(9%)

Table 4-2 First LE, characteristics of respondents to the questionnaire

There were only a few native English-speaking participants (3%), yet holding the LE in English was not considered to be a problem for the majority (77%). Satisfaction was high with a clear majority (98%) indicating that they were likely to participate in future LEs and that they would recommend this particular LE to other school teachers.

The following sections present a synthesis of the questionnaire data collected from the point of view of: skills and competences; learning, collaboration and dialogue; social aspects; and community. Note that all percentages are rounded.

4.1.2 Skills and competences

A clear majority of the respondents (87%) felt a bit or a lot more confident and competent about their use of Web 2.0 tools and techniques after the event. Similar results were found for using ICT and the internet (75%), communicating in online groups (77%) and collaborating in online groups (80%). It is hard to ascertain if these results refer to competence or confidence, as the question combined the two. However, the associated comments suggest the results relate mainly to confidence, as the following comment illustrates.

> I think any practical experience in using Web 2.0 and in communicating and collaborating in online groups can only give you more confidence (Ruxandra, female teacher from Romania)

Several people noted that it would have taken more time to become competent in collaborating.

> I wish I had more time to experiment more with the tools and communicate and collaborate in online groups (Ioanna, female teacher from Greece)

> … collaborating is very important and in a short time it is difficult to develop it in the group (Naþide, female teacher from Turkey)

Indeed, the lack of time and the intensity of the event seemed to be an issue for quite a few respondents.

> All Learning Events are very very useful but the main problem is in a short time we have to choose our partners and then begin to work together (Ece, female teacher from Turkey)

The feedback indicates that the main focus of participants was gaining more knowledge and first-hand experience of specific tools (technical use), rather than developing skills and competence for how to apply them effectively in teaching (pedagogical use).

There was evidence from the feedback that participants had started to encounter some of the challenges associated with group work in terms of group dynamics, the need for reciprocity and what to do when people do not pull their weight.

> I found it difficult that one member of our team wasn't willing to work collaboratively and just hanged on us (Marin, female teacher from Poland)

> It all depends on the group you are in I suppose. My group didn't work but I wish it would - so I made a lot of the activities on my own but and it was good there was this opportunity (Lise, female teacher from Denmark)

The comments also suggest, however, that there was little opportunity to reflect upon the implications (in terms of time or activity) and hence some participants may have found the experience somewhat frustrating.

I observed that the level of discourse was generally quite low in the discussion forums with little evidence of cognition beyond the lowest levels of triggering event and

exploration for cognitive presence in the CoI model (Garrison et al., 2001). There was a noticeable absence of explanation of thinking; for example, making assertions without context or justification. Similarly, few replies asked authors to go into more detail or to explain what they meant. The preoccupation of the participants seemed to be with completing the individual cognitive activities, rather than with discussing and reflecting on the consequences with peers.

4.1.3 Learning, collaboration and dialogue

The feedback from respondents reflected a preference for collaborating with others (47%) rather than learning on their own (17%, Figure 4-1). Yet in reality, a slight majority of respondents indicated that they had in fact learnt on their own (35%) as opposed to having learnt with others (22%, see Figure 4-2).

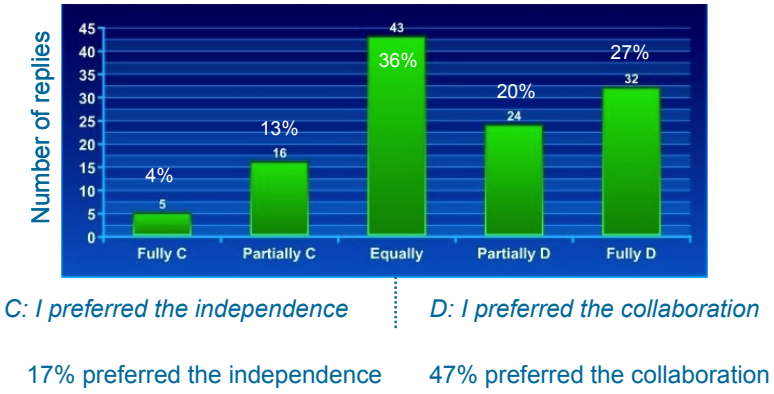


Figure 4-1 First LE, questionnaire: Results of question on preference for learning independently or in collaboration with others

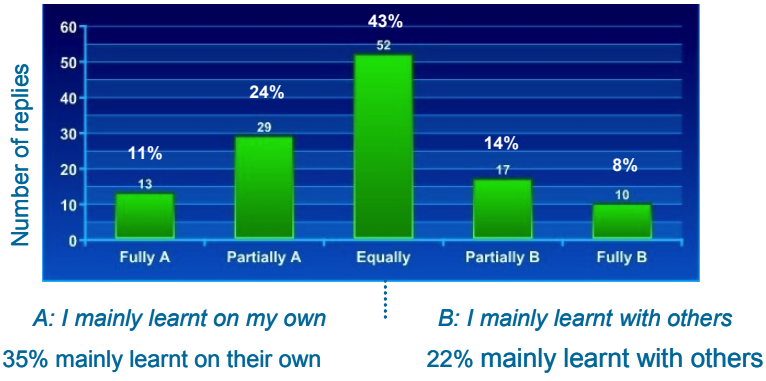


Figure 4-2 First LE, questionnaire: Results of question on learning on your own or learning with others

The disparity between a preference for collaboration but then mainly learning alone does not seem to have been linked to the activities, which encouraged collaboration according to the majority (59%). Rather, it may have been more linked to the availability of other participants, as the following comments suggest.

> [The lack of] Availability of the others made the individual learning [more] effective and faster, in some cases (Vittoria, female teacher from Italy)

> It was a real challenge to try in such a short period of time to find a common period of time for our group to meet and collaborate on the assignments (Lenuta, female teacher from Romania)

This disparity may also be due to a lack of experience in online collaboration, as the replies to the question on feedback suggest (Figure 4-3) – replies to this question indicate that most respondents enjoyed receiving feedback and reading the comments (passive involvement), and fewer enjoyed posting messages or replying to others (active involvement). Alternatively, it may be that the participants simply interpreted the expression 'I mainly learnt on my own' as meaning that learning was an individual cognitive act rather than a social one, even if carried out collaboratively.

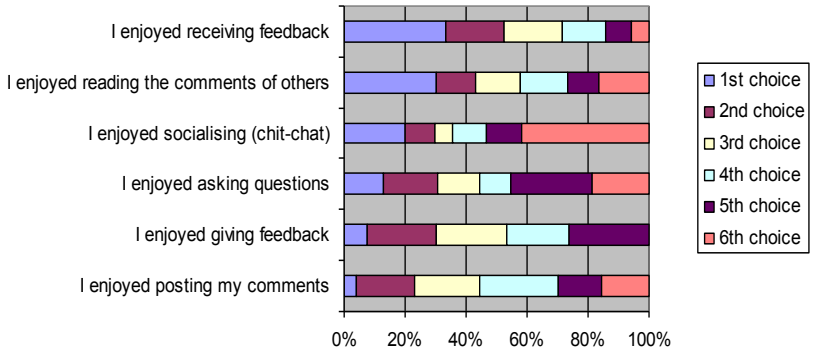


Figure 4-3 First LE, questionnaire: Results of question on giving and receiving feedback

Similarly, given the choice between posting messages to individuals, to their sub-group or to the whole learning event, the respondents preferred posting to individuals (first choice 39%, second choice 25%) or posting to their sub-group (first choice 32%,

second choice 59%). The comments reflected a reluctance to post messages in the general open forums.

> I am not ready for any public performances (Marin, female teacher from Poland)

> Again, small groups make possible more feedback, comments for the others (Vittoria, female teacher from Italy)

The results suggest a preference for dialogue in situations where one is more likely to receive feedback, where giving feedback is more personal and where it is more practicable to respond to other messages.

I observed that interaction was more fruitful in terms of feedback and development of the topic in the smaller groups, where greater intimacy was expressed.

4.1.4 Social aspects

Respondents found social interaction important, with a majority indicating that it was necessary to get to know people personally, that the profile pages were very useful (61%) and that it was helpful to see a face (51%). This was facilitated by the tools, which encouraged respondents to become familiar (60%) rather than remain discrete (13%). Personal information allowed people to make choices about whether a person had similar interests and was worth getting to know better, as the following comments illustrate.

> Profile information helped me to see when people had my same interests/views on teaching approaches (Concha, female teacher from Spain)

> I think it is important to know a bit about the personal life of people with whom we work as that allows us to understand them, to overcome distances and to know if the person interests us or not[7] (Hélène, female teacher from France)

Respondents took a pragmatic approach to communicating, focusing on the tasks in hand with interactions being mainly task-based (67%) rather than social in nature (11%), according to the feedback. This reaction to socialising, referred to as 'chit-

[7] 'je pense que c'est important de connaitre un peu de la vie personnel des gens avec lesquels on travail car cela permet de prendre ses repères, d'annuler les distances et de savoir si cette personne nous intéresse ou pas'

chat' in the questionnaire, may again be due to a pressing need to complete the activities, as the following comment highlights.

> I didn't have much time to socialise, so I mainly centered my attention on scheduled activities (Ovalia, female teacher from Spain)

The tutor, Tiina, commented that it may also be due to the fact that the LE was promoted as a training event and as such socialisation, or 'chit chat', may be perceived as time wasting or not doing what one should do (this question was rephrased in the questionnaire for the second LE in order not to give this impression).

There was a clear preference for meeting new people (73%) rather than existing friends (5%) and the majority thought that this was supported by both the tools (71%) and the activities (80%). The following comments were typical in this respect.

> It was more interesting to work with new people just because I prefer discovering (Marin, female teacher from Poland)

> Anyway, I preferred to focus on new Twinners. After all, I already have strong links with the others (Gabriella, female teacher from Italy)

This LE is not an isolated activity and the participants involved have other opportunities to meet with people they already know. The preference for meeting new people reflects a desire to expand one's circle of contacts and the practical need to find new colleagues with whom one can collaborate in a new eTwinning project.

4.1.5 Community

Given the preference for receiving feedback and for posting to individuals (see section 4.1.3), it is perhaps not surprising to also see a clear preference for working in smaller groups (51%) rather than in the general forum (22%).

When asked about the feeling of community within this LE, compared with that in eTwinning in general, the respondents indicated that it was either roughly the same (27%) or stronger (49%).

Nevertheless, when participants were asked whether they saw a) relationships develop between individuals or b) a whole community develop, 43% said the former and 27%

said the latter (Figure 4-4). So although there was a stronger sense of community, this feeling was not strong enough to suggest that a community had fully developed, as the following comment highlights.

> We hadn't enough time to see a whole community develop (Lorenza, female teacher from Italy)

I observed that communication within the forums quickly stopped once the cognitive activities had come to an end. This does not mean, however, that interaction did not continue outside of the LE using other social media, but rather that the community within the LE had perhaps served its purpose.

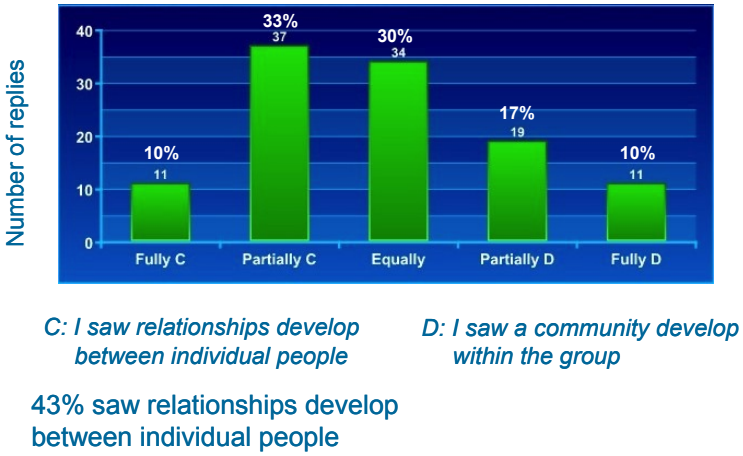


Figure 4-4 First LE, questionnaire: Results of question on the nature of the relationships that developed

4.2 Summary of findings from first cycle of research

The results indicate that participants generally felt more confident about their use of Web 2.0 tools and about communicating and collaborating in online groups, as a result of having taken part in the LE. However, there was insufficient time and opportunity to try out the tools in their own teaching practice. I observed that the discourse within the forums was at times quite superficial, that it generally stayed at the lower levels of cognition and that there was little evidence of critical thinking or metacognition.

Participants expressed a preference for learning with others in groups, but in reality many learnt on their own. Collaboration was beneficial when it was successful, but

difficult for some groups which faced challenges in self-organising. There was a preference for communicating and collaborating in the smaller groups, and I observed that this was where most feedback and mutual support from peers took place. I also noted that a lack of experience in online collaboration hindered some participants and that they were not necessarily aware of their inexperience and of the opportunity to learn these skills.

Social interaction was seen as very positive, with the profile pages helping the participants to make 'friends' and strengthen ties. However, it remained mainly task based. The participants sensed a feeling of community, however they perceived relationships as developing mainly between individuals (couples) rather than within the group (community) as a whole.

I observed that interaction was purposeful and mainly focused on the cognitive aspects, rather than on socio-emotional issues. Social interaction stopped quickly once the cognitive activities had come to an end.

The findings are further discussed in the next chapter and reflections on the use of the questionnaire are provided in section 8.2.3.

Chapter 5 Discussion on the First Cycle and Introduction to the Second Cycle

The previous chapter presented the findings from the first cycle of research that concern the first Learning Event (LE). This chapter discusses these results, the recommendations derived and the changes applied in the revised LE, which was subsequently investigated in a second cycle of research.

5.1 Discussion on the findings from the first cycle of research

The results are discussed from the perspective of the three presences of the Community of Inquiry (CoI) theoretical framework and conclusions drawn.

5.1.1 Competence development, practice and cognitive presence

The results suggest that participants perceived the goals of the LE to be about learning how to use Web 2.0 tools, per se, and not necessarily about how to use them in their own teaching practice. Moreover, there was little opportunity for the participants to try out what they were learning with their pupils. As such, they may have developed technical knowledge of using the tools from watching videos and reading the information provided in the LE – knowledge-*for*-practice (Cochran-Smith and Lytle, 1999), but they did not necessarily develop the valuable knowledge that comes from trying things out for themselves in their own teaching practice – knowledge-*of*-practice (1999). Such situated learning is important for providing opportunity for reflection-in-action (Schön, 1987) in social contexts where general knowledge can be turned into specific knowledge (Lave and Wenger, 1991).

Knowledge, skills and attitude need time to develop, and short intense continuous professional development (CPD) activities that are not grounded in everyday teaching practice are less successful at changing teachers' approaches (Guskey, 2002). Teachers need to see for themselves the impact on learning outcomes if they are to believe in the benefits of technology and change their attitude towards its use (Ottenbreit-Leftwich et al., 2010).

The analysis suggests that it should be a specific objective of the LE to try out ideas in practice and that more time, if necessary, should be provided to facilitate this.

In terms of collaboration, the results suggest that participants perceived the benefits of working with others, but in practice they preferred to work on their own following their own learning trajectory. They found it difficult to form themselves into small groups and the level of interaction reflected a focus on personal rather than shared learning. Some participants expressed frustration with the lack of time, availability and engagement of fellow group members. Overall, the success of the collaboration may have been influenced by the levels of teaching presence and social presence. This is further discussed in sections 5.1.2 and 5.1.3 below.

Collaboration is important as it provides the opportunity for learners to socially construct their knowledge, testing their ideas with others to develop individual interpretations and a common understanding, as they work together (Goodyear, 2002; Stahl, 2005). Meaning is 'not merely transferred from mind to mind by activities, but … is constructed by and exists in those activities' (Stahl, 2003, p.1). Moreover, CPD that provides an opportunity for teachers to reflect, discuss and exchange with their peers has been shown to be more successful (Boyle et al., 2004; Vescio et al., 2008).

Collaboration was part of the learning activities, but learning about collaboration per se was not an explicit goal of an activity, with reflection and opportunity to share how one felt about one's progress. Consequently, as the results suggest, when collaboration was unsuccessful, the participants were often unable to explain why and consequently did not develop the competence needed to deal with similar situations in the future.

In terms of cognition, the results suggest that there was significant interaction between the participants but that the level of the cognitive presence remained quite low. Yet critical discourse is essential for higher-order learning and if sufficiently grounded in the participants' context, can lead to new working knowledge (Goodyear and Zenios, 2007). Simple interaction is not enough to support critical thinking and metacognition (Garrison and Cleveland-Innes, 2005), the essential goal of a sound educational experience (Garrison, 1991; Akyol and Garrison, 2011). The results obtained here are coherent with other research which has suggested that the quality of the dialogue does not always correspond to the quantity (Garrison and Cleveland-Innes, 2005) and that learners in forums will primarily engage in serial monologues unless encouraged to do otherwise by an instructor or other teaching presence (Pawan et al., 2003); this aspect is discussed further in the next section.

5.1.2 Critical thinking, metacognition and teaching presence

Boud (1988) suggests that the level of structure and guidance offered during a learning experience should depend on the prior experience of the learners.

> It is not necessarily desirable that teachers construct courses which always allow for the maximum exercise of autonomy on the part of the students. If students have little experience of making decisions about structuring their learning on such a scale, the activity may be counterproductive and the course may simply give the appearance of promoting autonomy while actually inhibiting it. (Boud, 1988, p.24)

Novice learners need to be led towards autonomy, moving from dependence on the tutor towards *independence* and finally on to *interdependence* where the group sees the value of collaborating (Boud, 1988). Pedlar (1981, p.77) refers to this as 'the riddle of the liberating structure' and notes that learning communities often need some form of external guidance to launch them in the right direction: 'leading others to autonomy' (1981, p.81). This problem can be compounded in a web 2.0 environment, when participants encounter 'digital dissonance' (Lim et al., 2010, p.206) as they fail to fully recognise and exploit the participatory nature of social technologies.

Most of the participants in this LE had little experience of collaborating online and therefore had difficulty in organising themselves into teams and understanding what they were experiencing. The teaching presence needs to take this into account, designing and structuring the learning to foster autonomy. Furthermore, online learning can offer advantages compared with face to face learning, in terms of reflection and the preparation of considered replies, but this takes time (Meyer, 2003); something that participants indicated was in short supply.

In Salmon's (2000) five stage model for learning how to be a good online tutor (E-moderator), she suggests that guidance needs to be more evident at the start of each stage and gradually reduced as learners become autonomous and mutual support kicks in. Key to this model is stage 2, online socialisation, which involves the participants in an exchange of views about their feelings of working online and a group reflection of the implications for collaboration. In this critical stage, Salmon believes the role of the tutor is essential to guide the participants: 'E-moderators really

do have to use their skills to ensure that participants develop a sense of community in the medium' (Salmon, 2000, p.29). This critical stage of social negotiation on the process of collaborating online was missing from the first LE. Or at least it could be argued that it may have been more effective if there had been more teaching presence (Garrison and Arbaugh, 2007), activities designed specifically to address this particular topic (Goodyear, 2002) and more orchestration of the discussion (Dillenbourg, 2008).

The presence of the tutor and the predefined sequence of activities contributed to the teaching presence. However, in order to encourage critical thinking, the teaching presence must ensure that opportunity and encouragement for practice and reflection are designed into the cognitive activities, and that feedback, support and guidance are available during the learning to focus interaction and encourage critical thinking. The analysis suggests that there was scope for further developing these important aspects in the LE.

5.1.3 Relationships, community and social presence

The results indicate that the participants felt closer and more connected in this LE than they had been elsewhere within eTwinning. The profile pages, with personal information, were seen as beneficial in helping participants to get to know one another. Relationships developed and the ties grew stronger over time. In other words, the environment offered the social affordances needed for social presence to develop (Kreijns et al., 2002).

In describing social presence, Gunawardena and Zittle (1997) refer to the concepts of *immediacy* and *intimacy*. The former concerns factors such as eye contact, smiles and other socio-emotional cues that may or may not be available, depending on the affordances of the communication media. The latter refers more to the psychological distance between participants.

The profile pages and the exchange of personal information, especially in the introductory activity, appeared to increase the *immediacy* of the participants in the LE, whereas the informal nature of much of the interaction, the rapid feedback and the sharing of emotions helped to strengthen the *intimacy*. This was particularly noticeable in the sub-groups, which proved to be more popular with participants for collaboration. Here the likelihood of quick feedback was higher and the feeling of immediacy and intimacy was stronger. This positive impact of social presence of

learners' satisfaction concurs with other research on online communities(Gunawardena and Zittle, 1997; Rovai, 2002; Richardson and Swan, 2003; Chan et al., 2009; Dewiyanti et al., 2007).

Whereas social interaction was seen as positive, the results indicate that socialising per se was not a priority, with participants generally expressing a need to focus on the tasks in hand, adding that the short duration of the LE did not allow time for such informal dialogue. Moreover, there was little evidence that the social interaction that did take place had a positive impact on cognitive presence which remained rather low, as discussed in the previous section.

The LE was promoted as a professional development event with a focus on training and this is reflected in the approach of the participants who concentrated on the activities in hand and saw socialising as less important. This is consistent with most computer supported collaborative learning (CSCL) which focuses on the cognitive activities rather than the social, even if the environment affords the latter (Kreijns et al., 2003). A more holistic approach to online collaboration would embed social activities in the learning design and portray social interaction as essential for learning in groups (Kreijns et al., 2002; Volet and Wosnitza, 2004; Kreijns et al., 2007; Zenios and Holmes, 2010). Applying this philosophy to the LE, more attention could be paid at the beginning to specific activities aimed at encouraging social interaction and the establishment of relationships between participants in a group, thereby demonstrating their value and providing the essential 'grounding' for future collaboration (Stahl, 2005).

Garrison (2007, p.64) cautions, however, against seeing open communication and socio-emotional support as an end in itself; 'While effective communication may be important, it is not sufficient for educational purposes'. He posits that social presence becomes more important as learning moves from information acquisition to collaboration, noting that 'Social presence for educational purposes cannot be artificially separated from the purposeful nature of educational communication (i.e., cognitive and teaching presence)' (2007, p.65). This would suggest that social presence has a role to play throughout the LE, and not just at the start, and should be seen together with the cognitive and teaching presence to ensure a holistic approach to learning.

Whereas social interaction was strong and individual relationships developed, the results indicate that participants did not perceive the emergence of a sustainable

community within the short period of the LE. This conclusion concurs with other research that highlights that communities need time to form through social negotiation (Vratulis and Dobson, 2008) and the development of trust, shared values and reciprocation (McConnell, 2006).

The analysis suggests that shorter events may be appropriate for learning specific skills and for collaboration based upon weak social ties. However, in order to develop a community and thereby foster collaborative learning, longer LEs are necessary.

5.1.4 Conclusions and recommendations from the first cycle

In relation to the research questions (see section 1.5):

- *How does the online learning community influence the development of teachers' cognition, practice and competence?*

  The results suggest that the online learning community had a positive impact on learning, with skills being developed in the use of Web 2.0 tools and evidence of cognition in the discussion forums. However, cognitive activity remained at the lower levels of cognitive presence, as suggested by the CoI model (Garrison et al., 2000) and the school teachers had little or no opportunity to apply what they were learning in their teaching practice. Hence, there was little evidence of competence development or changes in teaching practice.

- *How do teaching presence and social presence influence the collaboration, the cognitive presence and the development of the community?*

  The results suggest that the social interaction helped to strengthen ties between participants, making them feel more connected and reinforcing social presence, according to the CoI model (Rourke et al., 2001a). However, relationships mainly developed between individuals and there was insufficient time for the burgeoning community to develop.

  The design of the activities and the interventions of the tutor created both a good teaching presence (Anderson et al., 2001) and a high level of satisfaction amongst participants. Nevertheless, the low levels of cognition in the discussion forums and the frustration experienced by some participants with their collaboration suggested that greater teaching presence at key points would be beneficial.

The analysis leads to the following recommendations for future LEs:

1. The events could be lengthened to give more time for school teachers to apply ideas in their own teaching practice, for social ties to strengthen and for the community to develop.

2. The cognitive presence could be usefully reinforced by including specific activities for informal reflection on the process of collaboration, the exchange of experience and the sharing of stories amongst peers. This would engender critical thinking and mega-cognition, thereby supporting competence development.

3. The social presence could be strengthened by addressing more the socio-emotional aspects in the cognitive activities and by encouraging the importance of team-work, of collaboration and of mutual support. This would in turn facilitate the development of cognitive presence and foster the development of the community.

4. The teaching presence could be reinforced at key points through more structure, guidance and encouragement of mutual peer support (feedback, encouragement, etc). This would launch the participants on the process of collaboration and reflection, lead them towards autonomy and, in turn, support the development of cognitive presence.

Although described separately, the results suggested that cognitive, social and teaching presences are inextricably intertwined and that a holistic approach is required to supporting the learning community. Emphasising only one or other of the three presences is unlikely, in itself, to have a positive impact on learning.

5.2 Introduction to the second cycle of research

5.2.1 Research context and objectives

Following the first LE, I discussed the recommendations, summarised in the previous section, with both the LE tutor and the organisers of the LE activities. They expressed an interest in addressing the recommendations in a second run of the LE, from October to November 2010, and our reflections led to a number of proposed changes which are further described below.

In terms of O'Leary's cycles of action research (O'Leary, 2004, cited in Koshy, 2010), see Figure 3-1, the second LE presented me with an opportunity to *act* upon the *plan* for changes from the first LE in a second cycle. The objective was therefore to apply the changes and further *observe*, collect data and *reflect* upon the implications for critical-thinking, socialisation and the development of a community. This would allow me to address my research questions, as discussed in section 1.5.

It became clear from the discussions with the LE tutor that I would need to take a more active role in the second LE. This would allow me to see and experience the interactions first hand, supporting reflexivity (Cohen et al., 2007). Moreover it would allow the tutor and me to enact change, based upon our observations as the LE proceeds, during the research process rather than 'tag it on as an afterthought which follows the conclusions of the research' (Denscombe, 2007, p.122).

As with the first LE, I was quite open about my involvement in the LE and about my research. Steps were taken during the registration process to ensure that participants were informed and to seek their permission to use their data (see section 3.7.2). From the beginning, I was introduced as a fellow tutor or moderator who was taking an active role in the LE.

5.2.2 Changes made to the second LE

The objectives of the second LE were the same as those of the first, as discussed in section 1.3.2. As previously, the number of participants was limited (this time to 211) and there were no restrictions placed on who could participate. The LE ran from 25 October to 27 November 2010. It lasted for 34 days, compared with 11 days for the first LE, in order to accommodate new activities – as illustrated in Figure 5-1.

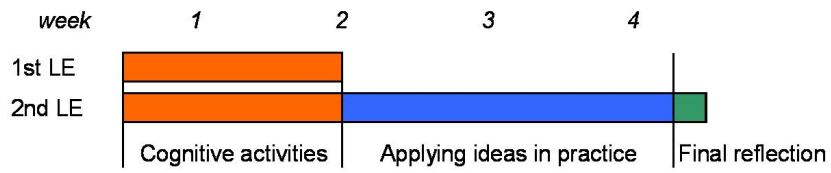


Figure 5-1 Timing of the second LE compared with the first

The changes applied in the second LE, in order to address the recommendations from the first LE (discussed in section 5.1.4), are summarised in Figure 5-2 and discussed in the following sections. Note that the changes applied sometimes addressed more than one of the recommendations.

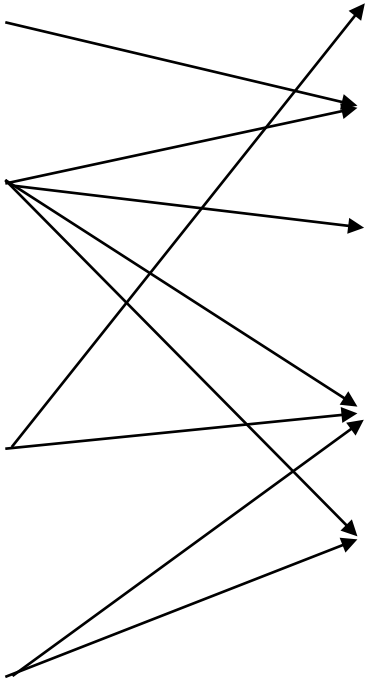
Recommendations for change from the first LE (section 5.1.4)	**Mapping**	**Main change made in second LE**
1. More time for school teachers to apply ideas in their own teaching practice		Addition of a virtual staff room as a social space to facilitate informal exchange
2. The cognitive presence could be usefully reinforced by including specific activities for informal reflection on the process of collaboration, the exchange of experience and the sharing of stories amongst peers		Specific activity added: *Applying ideas in practice*, 5-25 November
		Specific activity added: *Final reflection*, 26-27 November
3. The social presence could be strengthened by addressing more the socio-emotional aspects in the cognitive activities and by encouraging the importance of teamwork, of collaboration and of mutual support		Additional information and guidance provided in the staff room on the benefits of collaboration, sharing and reflecting with peers
4. The teaching presence could be reinforced at key points through more structure, guidance and encouragement of mutual support		Reinforced moderation at key points in the LE, notably during the welcome and final reflection activities

Figure 5-2 Mapping of the suggestions for change from the first LE onto the changes implemented in the second LE

Virtual staff room

We created a virtual staff room as a specific, separate space available throughout the event for informal discussion, collaboration and social interaction; as per recommendation 3 from the first LE. Rather like the physical staff rooms found in schools, the aim was to provide opportunity for serendipitous dialogue as well as more focused work discussions and thereby encourage a professional learning community to develop amongst the teachers (Bolam et al., 2005). Participants were actively encouraged to complement the task-based discussions in the activity forums with social interaction and reflection in the staff room on the implications for their teaching practice and competence development. In other words, to encourage metacognition or 'thinking about thinking' (Martinez, 2006, p.696).

The staff room was a separate discussion forum and had its own specific welcome page, as illustrated in Figure 5-3. Here, participants were presented with information on the objectives of the staff room, my comments as moderator and links to the specific discussion forums – as discussed below under teaching presence.

Applying ideas in practice

We decided that the principal cognitive activities of the first LE should remain (see Figure 1-2). However, in order to provide more opportunity for the participants to try out what they were learning in their own teaching practice, we added a specific activity aimed at this lasting almost three weeks; as per recommendation 1.

The period for practice was introduced with the specific objective of trying out the tools and reporting back to the other school teachers in the final reflection activity (see below). The participants were free to do what they wanted during this period, with no tutor support or collaborative work, however they were encouraged to keep in touch with peers in the staff room; the hope being that this would encourage mutual support and foster the continued development of the online community.

Final reflection activity

We designed the LE to finish with a final reflection activity back in the learning environment; as per recommendation 2. The objective announced to the participants was 'to go beyond thinking about the individual tools, to thinking about your teaching practice and the implications for your own continuous professional development'. We

decided to use the staff room for this purpose, rather than create a new discussion forum in the LE. The reason being that we wished to build upon the good collaboration that we saw taking place within the small groups of the round tables and to emphasise the different nature of this reflective activity.

The activity was implemented in two stages. The first was in the small groups at the individual round tables, where participants were asked to post messages in the forum giving their thoughts, as follows:

- *Describe a practical example of where you have used Web 2.0 tools in your everyday teaching practice.*
- *Explain how the tools supported or changed your teaching practice. For example, how did they affect your pedagogical approach?*
- *What lessons have you learnt from your experience? What would you recommend to other teachers?*
- *What are the implications for your own professional development?*

Within your sub-group, read the answers provided by your colleagues and post replies to them indicating your reflections on what you read: what do you note about your colleague's experience, is there something you could use, what suggestions do you have for your colleague, etc?

The second stage was in a single forum set up for everyone to participate together, rather like a plenary session at a conference. Here participants were asked to think about what they would say to a colleague from their school about what they have learnt from the LE. They were asked to look at what the other round tables had said and post a message suggesting what they saw 'emerging as common points of agreement, differences of opinion, suggestions for good practice and implications for teacher training'.

Together, the two stages would encourage individual interpretations and group sense-making in a social world (Stahl, 2005), based upon shared stories from concrete experience. With a focus on teaching practice, pedagogy and the real impact on learning in the classroom, it was hoped that this would have a positive impact on the school teachers' competence development and their attitude to applying changes in their own practice.

Teaching presence

Both the tutor and I ensured that none of the early participant messages in the staff room went unanswered and we encouraged critical thinking by asking open questions and by challenging the participants to go further with their thinking; as per recommendation 4. Orchestrating learning and reinforcing moderation at key points, in order to encourage critical thinking and support the participants to become more autonomous, is in line with the approach proposed by Dillenbourg (2008) and Salmon (2000).

I ensured a teaching presence in the staff room by offering several relevant quotations concerning the value of collaboration, sharing and mutual support, and by regularly posting messages highlighting good practice in the staff room. The objective was to stimulate reflection and to encourage the participants to offer feedback and to support one another.

We also decided to carry out the welcome activities in the staff room and to pre-arrange their allocation into small groups. Each participant was assigned to a 'round table' which had its own discussion area in the staff room (see Figure 5-4). Twenty round tables were created and named according to colours from Azure to White. Participants were allocated by the tutor according to the ages of the children they taught and the subject. The intention was to put like-minded people together and to avoid some of the frustration that occurred in the first LE, where time was lost by people trying to self-organise themselves into groups. Most importantly, by establishing the groups at the outset in the welcome activity, the hope was that by the time the collaboration activities started, the groups would have the necessary 'grounding' to be able to focus on the collaboration (Stahl, 2005). By placing the welcome activities in the staff room and at round tables that would exist for the duration of the LE, we were also hoping to reinforce the social presence; as per recommendation 3.

Whereas participants were pre-allocated to their round table, there was no restriction made on who could see and post messages, and where they could be posted in the staff room. Hence it was possible for participants to post a message in any group and to respond to any previous message. We decided it was part of the learning experience for collaborating online that there were as few restrictions as possible and that participants could decide for themselves how to behave towards other groups.

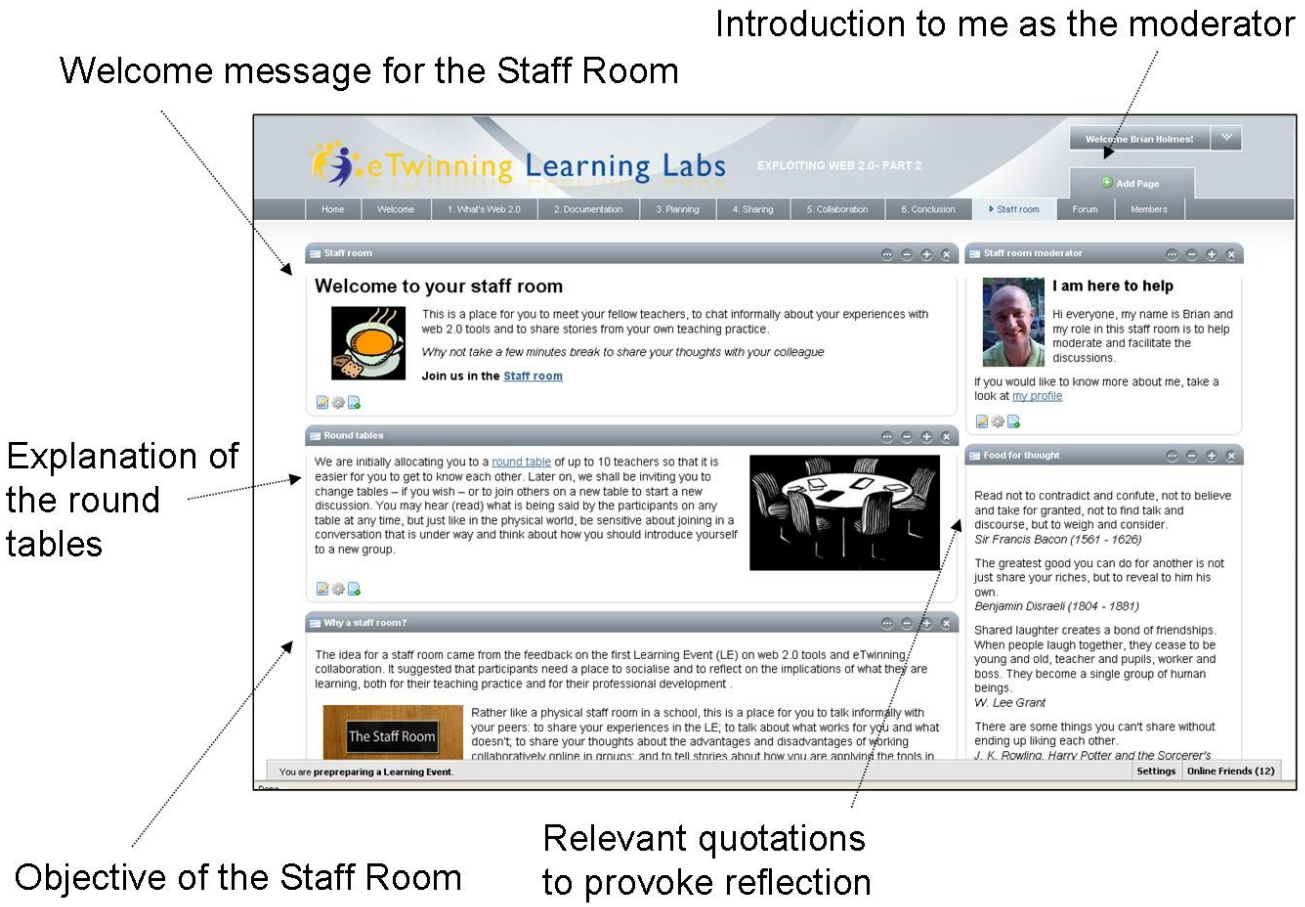


Figure 5-3

Second LE: The staff room welcome page

Round tables: with a discussion forum (category) for each table

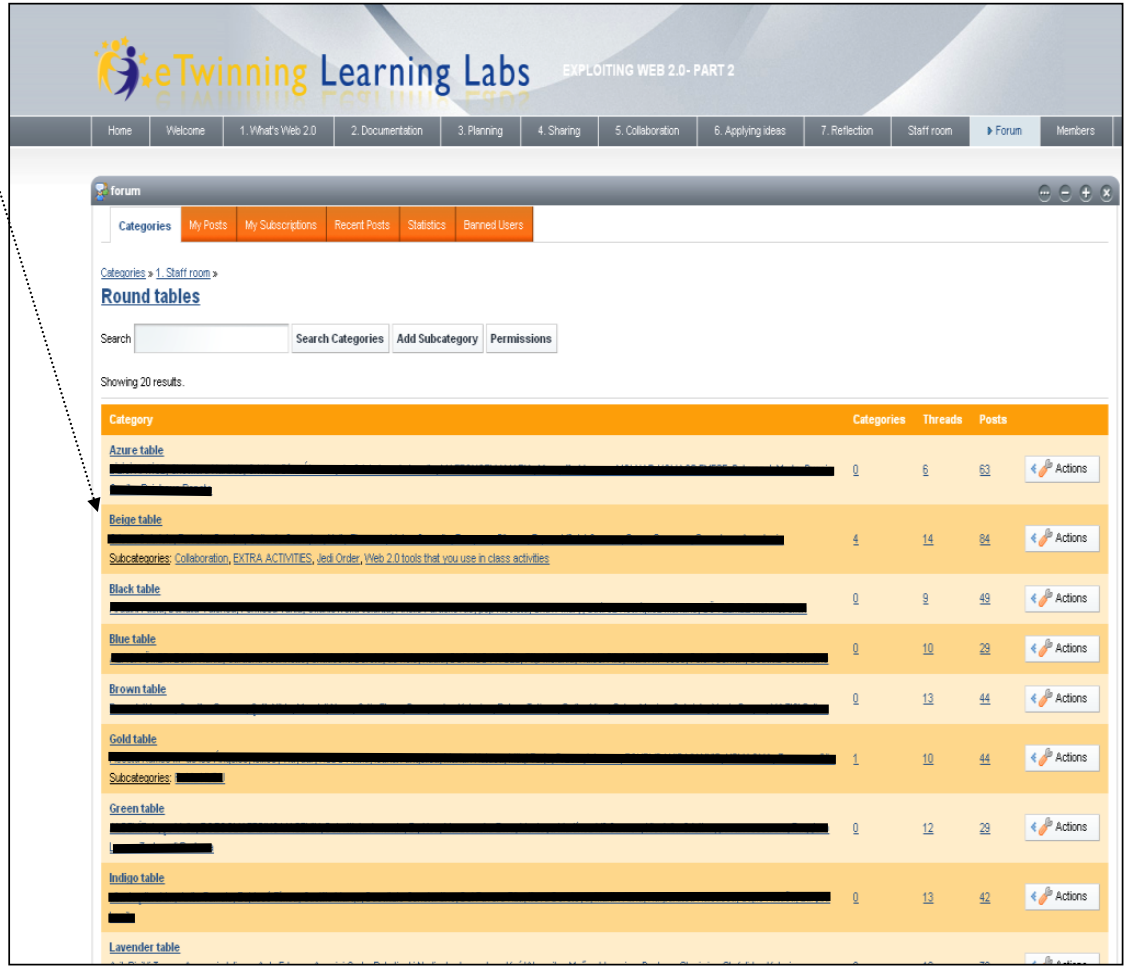


Figure 5-4

Second LE: The staff room round tables

5.3 Summary

This chapter discussed the findings from the first cycle of research, concerning the first LE, and used the analysis to propose recommendations for how future LEs could be changed to improve the educational experience for participants. It then introduced the second cycle of research, discussing the changes made in the second LE in order to apply the recommendations (summarised in Figure 5-2).

The next two chapters present the findings from the second cycle of research; Chapter 6 concerns the perceptions of the participants and Chapter 7 looks at the online discourse.

Chapter 6 Research Findings from the Second Cycle: Participants' Perceptions

This chapter presents the findings from the second cycle of research that concern the participants' perceptions of the second of the two Learning Events (LEs). The data were collected through a participant questionnaire and interviews, as discussed in section 3.2. The findings are summarised in sections 6.2.8 and 6.3.3, and subsequently discussed in Chapter 8.

6.1 Participants

For the second LE, 142 school teachers started in the welcome activity[8] and 108 (76%) successfully finished obtaining a certificate of completion (Sarisalmi, 2010b). The participants in the second LE were different to those in the first, apart from one teacher, Lenuta from Romania, who was involved in both.

During the registration process for the second LE, the 210 registered participants indicated their age group and their country of residence[9]; these are illustrated in Figure 6-1. The data reflects a broad range of participant ages and cultural backgrounds, as is typically found in the eTwinning initiative (see section 1.3.1), with the majority of the LE participants being in the age group 36-45 years old and from Romania and the Mediterranean countries of Italy, Turkey, Greece and Spain.

6.2 Questionnaire

All the participants of the second LE were solicited for their opinion via an online questionnaire available for 10 days between 26 November and 6 December 2010. The questions were based upon those used in the questionnaire after the first LE (see section 4.1) in order to facilitate a comparison of the results. A few questions were modified slightly to remove ambiguities that had been noted previously or were removed altogether as they were no longer considered relevant to the research. Additional questions were added to address the changes introduced into the second LE, notably the staff room, the period for trying out ideas in practice and the final reflection activity. The questions are summarised in Table 6-2 below.

---

8 The analysis shows that 147 participants actually posted at least one message in the staff room

9 This information was not available for the first LE

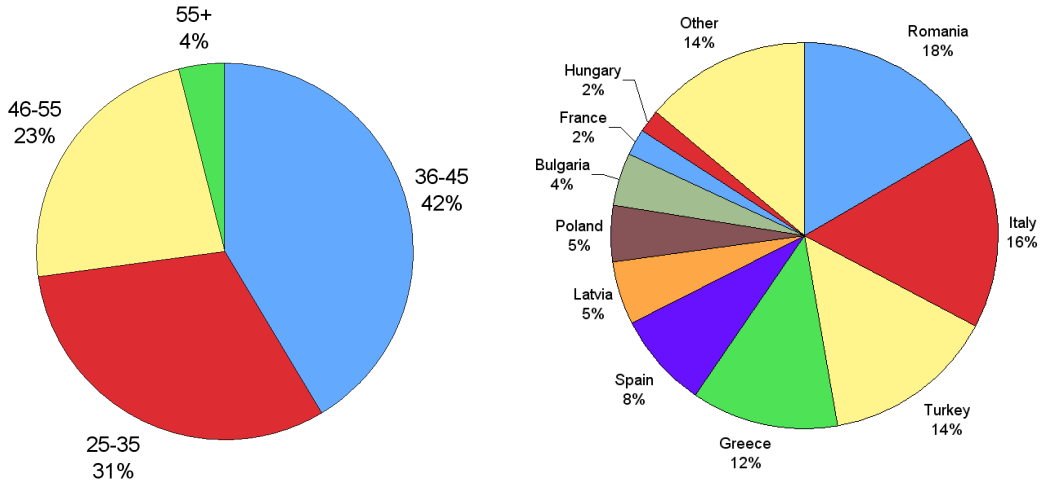


Figure 6-1 LE2, age group and country of registered participants (n = 210)

6.2.1 Questionnaire respondents

There were 82 useable replies received for the questionnaire, representing 58% of the 142 school teachers who started the event (Sarisalmi, 2010b). Of those respondents who provided personal details (76 of the 82, see Table 6-1) most were female (88%) and represented 18 nationalities (as for the first LE, see section 4.1.1, the gender balance of respondents to the questionnaire was similar to that in the LE). For the majority of respondents (54%) this was not their first LE and, unlike with the first LE (see Table 4-2), most considered themselves to be inexperienced eTwinners (57%).

	N° respondents	
First Learning Event in which they participated	35	(46%)
Native English speaker	3	(4%)
Experienced eTwinner	33	(43%)
Number of respondents to above questions	*76*	*(100%)*
Female	66	(88%)
Male	9	(12%)

Table 6-1 Second LE, characteristics of respondents to the questionnaire

N°	Question description	Question type
1.	Consent *Asks respondents to confirm their consent*	*Yes/No*
2.	Skills and competences *Asks respondents whether they feel less or more confident and competent as a result of the LE for a range of activities including communicating and collaborating online*	*5 point Likert scales*
3.	Learning *Asks respondents what best describes their learning experience in the LE in terms of learning on their own or in groups, etc*	*5 point Likert scales*
4.	Tutoring/facilitation *Asks respondents what best describes their experience of tutoring and facilitation*	*5 point Likert scales*
5.	Dialogue *Asks respondents about their preferences for posting messages and giving feedback*	*Preference rating choices*
6.	Community *Asks respondents what best describes their experience of working in an online community*	*5 point Likert scales*
7.	Staff room *Asks respondents what best describes their experience in the staff room*	*5 point Likert scales*
8.	Applying ideas and final reflection *Asks respondents what best describes their experience of the period for practice and the final reflection*	*5 point Likert scales*
9.	Personal details *Asks respondents to provide a few demographic details, to give their name and their email address if they volunteer to be interviewed*	*Yes/No and open*
10.	Feedback *Invites respondents to give feedback on the questionnaire*	*Open*

Table 6-2 Second LE, summary of questions in the questionnaire

As with the first LE, there were only a few native English respondents (4%). 48 respondents (59%) volunteered to give their name and 46 (56%) their email address. Satisfaction was again high, with all respondents (100%) indicating that they would recommend this LE to other teachers.

During my subsequent analysis of the results, I noted that further information was needed on how the school teachers had perceived the term *competence*, as used in the questionnaire. Consequently a supplementary questionnaire was made available for 21 days between 22 August and 11 September 2011 to those 46 respondents who had given their email address in their previous reply, plus the tutor Tiina. For this second questionnaire, 25 usable replies were received (representing 54% of those contacted). The supplementary questionnaire is further discussed in section 6.2.7.

The following sections present a synthesis of the findings from the questionnaire from the point of view of competence, collaboration, practice, tutoring and community. Note that the statements that yielded the highest number of responses are used to illustrate the results.

6.2.2 Skills and competence

Respondents expressed a very similar high level of confidence and competence for working with Web 2.0 tools (91%), for communicating online (77%) and for collaborating in online groups (80%), as they had done after the first LE (with a maximum difference of 4% in the averages). For the additional questions the responses were also positive; for applying Web 2.0 tools in their teaching practice (89%) and for managing online collaboration with pupils (83%). The following comment illustrates the result.

> Now, I feel more confident and quite well prepared for working with Web 2.0 tools in my everyday life and especially in my professional life (Anonymous reply)

6.2.3 Cooperation and collaboration

In the second LE, there was a noticeable increase in the participants' perception of the level of communication, cooperation and collaboration, as illustrated in Table 6-3.

The feedback after the first LE had suggested that 47% of respondents had preferred collaboration, but in reality only 22% had learnt with others (see Figure 4-1 and Figure 4-2). They had cited several practical problems with the collaboration, such as

lack of time, difficulty with establishing the small groups and a general lack of cohesion. Feedback from this second LE, on the other hand, suggested collaboration had been more successful, with a greater recognition of the value of collaboration and of learning with one another. The participants seemed to appreciate the possibility to share their ideas with peers as part of the learning process, as the following comment illustrates.

> Everything seemed equilibrating for me: individual work and group work, shared experience and collaboration. I had a lot to learn from our group mates and from the other groups too. (Sorina, female teacher from Romania)

Question Degree to which the participant agreed with the statement? (as expressed in the second LE)	**1st LE results** N° respondents (n=120) partially	fully	**total**	**2nd LE results** N° respondents (n=82) partially	fully	**total**
I got a lot of support from my group/ peers	17 (14%)	10 (8%	**27 (22%)**	28 (34%)	10 (12%)	**38 (46%)**
I preferred the collaboration	24 (20%)	32 (27%	**56 (47%)**	21 (26%)	31 (38%)	**52 (63%)**
The Learning Event activities mainly encouraged learning in groups	38 (32%)	32 (27%	**70 (58%)**	27 (33%)	34 (41%)	**61 (74%)**
I found myself mainly learning with others because collaboration was so easy	25 (21%)	11 (9%	**36 (30%)**	28 (35%)	21 (26%)	**49 (61%)**

Table 6-3 Questionnaire: comparison of responses from the first and second LEs for questions on collaboration

Collaboration, however, was not always successful and when it failed it led to considerable frustration. Throughout the questionnaire, a few respondents referred to the failure of their peers to contribute, to their round table being almost silent and to the lack of explicit opportunity given for them to do something about it:

> When we started to create our project for real, new pbs [problems] appeared, and we did not find the way to discuss together again and try to solve them. Everybody goes their way. (Anonymous)

> Most of the members of my group dropped out before the end of the event. There was one willing to cooperate but she was way behind schedule. The other member of my group was somehow distant. … At the beginning I liked the idea of a round table but it turned out to be leading to a kind of isolation from the other participants of the event. (Hespera, female teacher from Greece)

The comments suggest that some groups failed to self-organise and that participants did not feel the freedom to move to another group.

6.2.4 Practice and reflection

The results indicate that participants appreciated the possibility to apply what they were learning in their own teaching practice and share their experience in the final reflection. The purpose of the final reflection activity was clear (93%) and most found the period for practice and the final reflection improved their understanding (87%).

76% of respondents (57 participants) indicated that they were able to try out what they were learning in their teaching practice. This is a considerable improvement on the first LE where the feedback suggested that participants were generally unable to try out what they were learning in their teaching practice (see section 4.1.2). Of the respondents that replied positively to this question, 93% (53 participants) indicated that they felt more confident and competent in applying Web 2.0 tools in their teaching practice, and 90% (50 participants) felt more confident and competent in managing online collaboration with pupils (as discussed in section 6.2.2). This contrasts with those who were not able to try things out in practice, where the results were 89% (8 participants) and 55% respectively (5 participants).

It was a challenge for some to apply what they were learning due to a lack of time or opportunity, as the following comments illustrate.

> I hope I will be more couragous in teaching, but I have to have more time to incorporate the tools in my job. (Zenka, female teacher from Poland)

> Difficult to apply ideas in such a short period of time, at least difficult to apply more than one to some effect. (Ulrike, female teacher from Germany)

Overall, the results suggest that if participants have the opportunity and make the effort to apply what they have learnt in their own teaching practice, then they have a lot to benefit from sharing their experience with their peers. On the other hand, if they do not have the opportunity, they may still have a lot to learn from discussing with those who did.

Few comments were provided in the replies to the questionnaire specifically concerning the final reflection; perhaps because the participants had been commenting so extensively in the final reflection activity itself. Those who did comment tended to reiterate frustrations that they had with their group collaboration (see previous section). Nevertheless, the following comment illustrates the perceived value of the online discussions in general, as given in response to the question on dialogue.

> Posting messages and giving feedback with them was funny and gave me a lot of opportunities to check my own ideas, share them with others and especially observe and compare the ideas of others. (Anonymous)

6.2.5 Tutoring/facilitation

The replies concerning the questions on tutoring and facilitation suggest that participants were generally happy with the approach. The respondents felt that the tutor/facilitator helped them to find out things for themselves (68%) rather than teach them (11%). Most felt that the tutor/facilitator encouraged learning in groups (80%) rather than learning individually (3%). The majority felt that the level of intervention of the tutor/facilitator was well balanced and should not be changed (56%), with fewer suggesting that more intervention would have been useful (42%).

Regarding the challenges that some participants faced with collaboration, a few respondents suggested that the tutor/facilitator could/should have intervened when collaboration didn't materialise or that the arrangements with the round tables should have been flexible enough to have foreseen movement between groups:

> I would have appreciated intervention when group work collapsed … Should be made easier to find a new group to join for collaboration if the original group collapses. (Ulrike, female teacher from Germany)

Overall, the results suggest that people were very happy with the structure of the activities and the guidance offered. The following comment is representative of those received.

> The tutor was there when we needed his help. All was very well. (Sorina, female teacher from Romania)

Indeed, some respondents indicated that it was at times hard to distinguish between the support offered by the tutors and that offered by peers:

> There so many learners involved in the learning event that it was difficult for me to know who was a learner like me helping me or who was (or were?) the tutor(s)... (Marion, female teacher from France)

> Was it you, the facilitator? (I suppose yes) (Anonymous, female teacher from France)

An area where tutor presence was seen to be particularly useful was the staff room, with 82% of respondents indicating that it added value.

6.2.6 Staff room, social aspects and community

Staff room

The results indicate that the reason for the staff room was well understood by respondents (78%) and that it was a useful place to reflect and share with peers (81%). Most found the discussions to be easy-going and relaxed (67%), and many used the staff room for informal discussions within their group (57%). The majority (74%) felt that the discussions at the round tables really helped the groups to collaborate, that it helped the community in general to grow (77%) and that it was a good idea to have pre-allocated the participants to the tables (73%); the latter is noteworthy as the lack of pre-allocation in the first LE, when participants were asked to self-organise themselves into groups, had been a source of dissatisfaction for some participants.

The staff room was perceived to be less useful during the period for which the participants were busy applying the ideas in their own teaching practice; only 42% of respondents found it useful then (compared with 81% during other times) and 24% indicated that it was not useful (section 7.1 discusses how interaction in the staff room

tailed off dramatically both during this period and after the final reflection activity had finished).

There were very few comments about the staff room from the respondents. They did, however, recognise that reading and replying to messages from peers was time consuming.

> I think it is important to share your experience with the others, to congratulate them for their work, to make new friends, but it was a bit tiring for me to post so many messages. (Sorina, female teacher from Romania)

> The problem was that it took very much time, even though it was interesting. (Anonymous, female teacher from France)

Social aspects

A comparison of results between the first and second LE for questions concerning social interaction reveals little difference, except for a shift in preference from posting messages to individuals (down from 37% to 18%), towards posting to the sub-group (up from 30% to 68%). This possibly reflects the greater cohesion that was seen in the sub-groups, helped by the establishment of the round tables in the staff room from the start of the LE.

Overall, the questionnaire reveals little about the impact of social aspects per se and one needs to look at the replies to the interviews (see section 6.3) and to the coding of the dialogue in the forums (see Chapter 7) in order to better understand this aspect.

Community

The results suggest that participants again preferred working in the sub-groups (59%), as opposed to working within the community at large (19%). The results also suggest that the feeling of community was stronger in this LE than after the previous one, despite the low level of communication in the sub-groups during the period for applying ideas in teaching practice, as illustrated in Table 6-4, which shows a comparison of the results between the two LEs for questions concerning the community.

Few comments were received concerning the community, however the comments concurred with the quantitative results, as the following illustrate.

It was a real collaboration and the group became a real community. (Iona, female teacher from Romania)

The work within a group is always hard but by dividing us into smaller groups it was much easier. But also there was the possibility to work as the whole community and it was interesting to observe and participate in it. (Anonymous)

Question	**1st LE results** N° of respondents (n=112)			**2nd LE results** N° of respondents (n=78)		
Degree to which the participant agreed with the statement? (as expressed in the second LE)	partially	fully	**total**	partially	fully	**total**
I preferred working in the smaller groups	21 (19%)	36 (32%)	**57 (51%)**	31 (19%)	15 (40%)	**46 (59%)**
I saw a community develop within the group	19 (17%)	11 (10%)	**30 (27%)**	36 (46%)	9 (12%)	**45 (58%)**

Table 6-4 Questionnaire: comparison of responses from the first and second LEs for questions on the community

Figure 6-2 illustrates the replies received for the question concerning the nature of the relationships that developed.

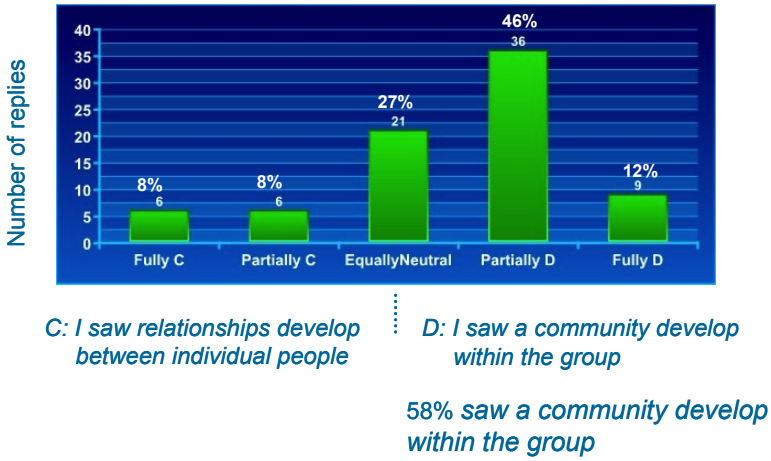


Figure 6-2 Second LE, questionnaire: results of question on the nature of the relationships that developed

The majority had the perception that a community was developing (58%), rather than just strong ties between individuals (16%). This contrasts with the results obtained after the first LE, as illustrated by Figure 4-4, where the perception was that individual relationships developed (43%) rather than a community as a whole (27%).

6.2.7 Supplementary questionnaire on competence

In analysing the responses to the questionnaire, presented above, I realised that I had asked the participants about their opinion on competence development without trying to understand how they might interpret the concept. This is a problem as the term *competence* can have different interpretations (as discussed in Chapter 2).

In order to address the above concern, I launched a supplementary questionnaire with the following questions.

1. In your opinion, how would you describe being 'competent' in applying Web 2.0 tools in your teaching practice?
2. When a teacher applies Web 2.0 tools in their teaching practice ...
   What skills are involved?
   What knowledge is involved?
   What aptitudes and attitudes are involved?
3. Is there anything else you would like to say about competence and being competent?

The teachers were firstly prompted by an open question (number 1) to offer them the opportunity to give their own interpretation of competence before being asked a more structured question (number 2) inspired by the definition of competence used in EU policy making (as discussed in section 2.3). Note that aptitudes and attitudes were treated together because the difference between the two is rather subtle and not necessarily easily understood by non-native English speakers.

The 25 replies received were entered into the CAQDAS tool and analysed using *in vivo* coding, as discussed in section 3.3. The results are summarised in Table 6-5 to Table 6-8.

Being competent in applying Web 2.0 tools in teaching practice

Whereas knowledge of the technology itself emerged as being important for the respondents, knowledge of teaching practice (pedagogy) was the aspect cited the most

(Table 6-5). Respondents also recognised the importance of feeling confident and of having the right aptitude and attitude.

Code	**Frequency** (n=25)	**Example answer**
C Knowledge teaching practice	20 (80%)	'a competent teacher is able to communicate and work with his students in a more appropriate way by using the ICT' (Anonymous)
C Knowledge Web 2.0 and ICT	7 (28%)	'to be fluent or at least be sure how to use web.2.0 tools' (Zenka, female teacher from Poland)
C Confidence	5 (20%)	'feeling confident about using these tools' (Ulrike, female teacher from Germany)
C Aptitude and attitude	5 (20%)	'Understanding that there are new applications and tools being developed all the time' (Tiina, female teacher from Finland)
C Skills	3 (12%)	'being an example for the pupils how to use efficiently the internet' (Sorina, female teacher from Romania)
C Experience	2 (8%)	'experience of doing something' (Radka, female teacher from Bulgaria)
C Autonomy	1 (4%)	'It also means being independent from the other colleagues in case there is a problem.' (Marion, female teacher from France)

Table 6-5 Second LE: coding results for supplementary questionnaire: how would you describe being competent?

What skills, knowledge, aptitudes and attitudes are involved?

In terms of skills, respondents highlighted the importance of being able to design, plan and organise the learning with their pupils, in addition to having the basic technical skills (Table 6-6). Similarly, knowledge of how to apply the tools effectively for learning emerged as the most cited know-how for a competent teacher, in addition to knowledge of the affordances of the tools (Table 6-7). A long list of aptitudes and attitudes was mentioned by respondents (Table 6-8) of which a propensity to share and collaborate with other teachers was cited most, together with the need to be

flexible and open to change. Similarly, they saw the use of Web 2.0 tools in the context of being creative, innovative and wanting to improve learning for their pupils.

Code	**Frequency** (n=25)	**Example answer**
S Design, plan, organise, teach	12 (48%)	'planning procedures, defining content, organise the work, pupils' active involvment' (Luciana, female teacher from Italy)
S ICT, technical skills	10 (40%)	'basic computer skills' (Delores, female teacher from Spain)
S Language, communication	5 (20%)	'Reading, Writing, Speaking and Listening' (Elicia, female teacher from Spain)
S Learning, researching, creativity, innovation	5 (20%)	'researching/learning skills' (Roberta, female teacher from Romania)
S Critical thinking, metacognition	1 (4%)	'producing the new information passing it through the author's point of view, critical thinking, metacognition, etc' (Sorina, female teacher from Romania)

Table 6-6 Second LE: coding results for supplementary questionnaire: what skills are involved?

Reflections on competence

In response to the final question, 17 of the 25 teachers offered reflections on competence and being competent. Several mentioned that it is a very dynamic concept and that a competent teacher never stops learning. Others related competence to the very core of teaching and its values to society in terms of human relations.

> Is nice to have a competence but is more important to be competent. (Anca, female teacher from Romania)

The comments from the teachers suggest that their interpretation of the term *competence* is similar to my own. This gives me confidence with the data collected and with my analysis.

Code	Frequency (n=25)	Example answer
K teach, collaborate, tools in practice	11 (44%)	'to be able to decide whether a tool is worth being used for a specific purpose' (Ulrike, female teacher from Germany)
K Web 2.0, ICT	9 (36%)	'knowledge of what, how and what does a Web 2.0 tool' (Delores, female teacher from Spain)
K Languages	2 (8%)	'foreign languages' (Roberta, female teacher from Romania)
K Own capabilities	2 (8%)	'personal knowledge and procedural' (Elicia, female teacher from Spain)

Table 6-7 Second LE: coding results for supplementary questionnaire: what knowledge is involved?

Code	Frequency (n=25)	Example answer
A Collaborate, cooperate, share, teamwork	6 (24%)	'à mon avis, ce sont surtout des attitudes de type relationnel, de partage de connaissances [10]' (Kara, female teacher from Italy)
A Open to change, flexible	6 (24%)	'open-mindedness, involvement in the education of the future' (Delores, female teacher from Spain)
A Creative, innovative, improve	5 (20%)	'The teacher should always be trying to adjust their teaching' (Radka, female teacher from Bulgaria)
A Desire to be competent, to learn	5 (20%)	'désir d'apprendre [11]' (Kara, female teacher from Italy)
A Believe in ICT	3 (12%)	'being open-minded towards ict in the classroom' (Ulrike, female teacher from Germany)

Cont ...

[10] In my opinion, it is above all relational attitudes, sharing knowledge

[11] Desire to learn

A Help, support pupils	2 (8%)	'priority to the pupils as sometimes we use technology for its sake and not for the sake of our teaching aims!' (Sophia, female teacher from Greece)
A Patient	2 (8%)	'Patience as technology is not easy for everyone' (Sophia, female teacher from Greece)
A Serious, dedicated, committed, responsible	2 (8%)	'responsibility for the students' (Tiina, female teacher from Finland)
A Listen, communicate	2 (8%)	'willingness to listen' (Tiina, female teacher from Finland)
A Culturally sensitive	1 (4%)	'understanding cultural differences and values' (Lenuta, female teacher from Romania)
A Global	1 (4%)	'global perspective' (Lenuta, female teacher from Romania)
A Leader	1 (4%)	'leadership' (Tiina, female teacher from Finland)
A Safety	1 (4%)	'safe and comfortable learning environment' (Radka, female teacher from Bulgaria)
A Courageous, self-confident	1 (4%)	'courageous, self confidence' (Sorina, female teacher from Bulgaria)

Table 6-8 Second LE: coding results for supplementary questionnaire: what aptitudes/attitudes are involved?

6.2.8 Summary of results of the questionnaires

The results from the questionnaires suggest that respondents felt more confident and competent in using Web 2.0 tools in their teaching practice and in managing online collaboration with their pupils as a result of having participated in the LE. In this context, they understood competence as having knowledge of the appropriate pedagogical approach to use, the skills to use the tools effectively and the right aptitude and attitude to constantly adapt, learn and change to improve learning.

The period for applying ideas in practice and the final reflection were appreciated by the respondents. Those who were able to try out what they were learning in their teaching practice seemed to have benefited greatly from their experience and had

improved their understanding by reflecting and sharing with their peers afterwards. Those who were not able to try things out for themselves but participated in the final reflection were still able to benefit from vicarious learning by discussing with those who were able.

Collaboration was perceived as being more successful in the second LE, with evidence of increased learning with others rather than learning alone. The presence of the staff room, as an informal space for sharing and reflecting, and the creation of small groups in round tables were perceived by respondents as having a positive effect on collaboration. The results suggest that establishing these from the beginning of the LE helped the groups to form and bond through social interaction. The tables remained a place to regroup and share throughout the LE and the respondents suggested that they helped the community to grow - more strongly than had been observed during the first LE.

The respondents perceived the interventions and feedback of the tutor and myself to be well balanced. The pre-allocation of participants to groups was welcomed by the respondents and some of the frustration expressed in the first LE was thus avoided.

The questionnaire suggests that the experience was less positive for some respondents than others. When collaboration failed to materialise in the groups, there was a feeling that they were helpless to do anything about it. In this respect, there was the expectation that the tutor would intervene or that there should have been the flexibility to allow the participants to change groups.

The findings are further discussed in section 8.1 and reflections on the use of the questionnaire are provided in section 8.2.3.

6.3 Interviews

Interviews were conducted with several participants before and after the LE, as discussed in section 3.2.3. They were held on 24 October 2010 and between 14 and 22 December 2010 (the LE itself took place from 25 to 27 November 2010).

6.3.1 Interviews before the second LE – participants' expectations

As a result of the invitation to be interviewed during the registration process, 119 (57%) of the 210 registered participants volunteered and were subsequently

contacted by email to confirm their agreement to being interviewed (note that the gender of participants was not explicitly recorded). 52 of these replied positively, however the majority (43) preferred to answer the questions via email for reasons of convenience or because they did not feel comfortable being interviewed orally. The remainder (9) were interviewed via Skype®, of which one interview was conducted in French.

The interviews were semi-structured with the following questions:

1. What are your expectations for this event?
2. How do you think it will help your teaching practice?
3. What do you expect from your fellow participants?
4. What do you expect from the tutor/facilitator?
5. How important do you expect social contact to be?
6. How would you describe online collaboration?
7. Do you expect the community within this LE to help with learning?
8. How do you expect the community to evolve?
9. Anything else that you would like to say before we start the LE?

The data were transcribed and processed with the support of the CAQDAS, as discussed in section 3.3.1. The responses that appeared to offer the greatest insight (questions 1, 3 and 4) were *in vivo* coded and the results are presented below in Table 6-9 to Table 6-11, together with an indication of the frequency of occurrence of the codes and examples of text associated with each one. Note that several codes may be associated with a single answer from a respondent.

Question 1: What are your expectations for this event?

As Table 6-9 illustrates, the interviewees mostly expected to learn about Web 2.0 and the tools, with a slightly smaller number expecting to learn about how they are applied in their teaching practice. They expected to meet other teachers and to share experience, however few expected to actually collaborate.

Question 3: What do you expect from your fellow participants?

Table 6-10 shows that the interviewees mostly expected their peers to share experience and ideas. Few expected to receive mutual support, feedback and advice. Even fewer expected cooperation and collaboration.

Code	Frequency (n=52)	Example answer
E Web 2.0 and tools	25 (48%)	'I hope I'll learn about something everybody is talking nowadays: Web 2.0' (Concha, female teacher from Spain)
E Web 2.0 in teaching practice	20 (38%)	'So I expect to strengthen and broaden my mind and to be able to use the new tools in teaching my students' (Catalina, female teacher from Romania)
E Share experience	16 (31%)	'An exchange of experiences and some good practical examples will contribute to the implementation of these tools in European classroom' (Dirk, male teacher from Belgium)
E Meet other teachers	10 (19%)	'I want to "meet" new people, colleagues from different countries of EU and know different ideas about teaching' (Ecaterina, female teacher from Romania)
E Learn generally	8 (15%)	'I´d like to be a better teacher and I hope to learn many things' (Rocio, female teacher from Spain)
E Digital skills and competence	7 (13%)	'I would like to improve my ICT skills, that's it.' (Leticia, female teacher from Portugal)
E eTwinning project	4 (8%)	'I want to know other teachers and to start a new etwinning project' (Tullia, female teacher from Romania)
E Cooperation & collaboration	4 (8%)	'experience collaborative work in groups, something I have never experienced before' (Penka, female teacher from Bulgaria)
E English language	1 (2%)	'To improve my English language use in my didactics activities' (Donatella, female teacher from Italy)

Table 6-9 Second LE, coding results for interviews before the LE, question 1: What are your expectations for this event?

Code	Frequency (n=52)	Example answer
P Share experience & ideas	38 (73%)	'I know I can learn much from my fellow participants because each of us brings to the group his/her specific experience' (Annalisa, female teacher from Italy)
P Active support, feedback & advice	10 (19%)	'I would like to receive a feed-back of my work in the spirit of constructive criticism' (Catalina, female teacher from Romania)
P Friendship, openness	9 (17%)	'I would like them to be open, communicative, with respect for colleagues.' (Rodica, female teacher from Romania)
P Cooperation and collaboration	7 (13%)	'to know and collaborate their knowledge regarding the use of these Web 2.0 technologies in education' (Berker, male teacher from Turkey)
P New projects	5 (10%)	'I wish I could meet someone to develope a good eTwinning project, but it's not the main reason I'm here' (Concha, female teacher from Spain)

Table 6-10 Second LE, coding results for interviews before the LE, question 3: What do you expect from your fellow participants?

Question 4: What do you expect from the tutor/facilitator?

The interviewees mainly expected the tutors to provide guidance and moderation, as Table 6-11 illustrates. Also high in their expectations was the belief that the tutor would teach them, providing them with the content and knowledge that they needed to learn, and providing technical and theoretical support when they had a problem.

Questions 2 and 5 to 9

The replies to the remaining questions offered rather general, brief answers that would not add value by applying coding. In summary, the interviewees were unsure as to how the tools would influence their teaching practice; they expected social contact to be useful; they had difficulty sometimes in explaining what they understood by

collaboration (perhaps in this respect the question was unclear); and they did not know what to expect from the community.

The results of the interviews are summarised in section 6.3.3

Code	**Frequency** (n=52)	**Example answer**
T Guidance & moderation	20 (38%)	'To energize the space and debate, to propose new topics for discussion' (Camila, female teacher from Spain)
T Teach, provide materials and knowledge	17 (33%)	'I expect from the tutor that he/she should teach me how to use these tools during my lectures, projects' (Berker, male teacher from Turkey)
T Help & problem solving	17 (33%)	'A technical and theoretical support for all participants' (Catalina, female teacher from Romania)
T Organise the LE activities	9 (17%)	'I expect the tutor organise the work in a rational and comprehensible way' (Annalisa, female teacher from Italy)
T Presence, availability	2 (4%)	'disposability' (Piero, male teacher from Italy)
T Equality of chance	1 (2%)	'To give everybody an equal chance of expression' (Rodica, female teacher from Romania)

Table 6-11 Second LE, coding results for interviews before the LE, question 4: What do you expect from the tutor/facilitator?

6.3.2 Interviews after the second LE – participants' experience

After the LE, the 52 participants previously interviewed were re-contacted to ask if they were willing to be re-interviewed. 17 of these replied positively (33%), of which 7 were interviewed via Skype ® and 10 via email.

The purpose of these interviews was to compare the participants' actual experience with their original expectations and to gain additional insight into the perceptions expressed in the questionnaire. The analysis aims to interpret their experience in relation to the changes made to the LE and the cognitive, teaching and social presences of the LE.

The 10 interviewees who had successfully finished the LE were asked the first 8 of the questions from the previous interviews (see section 6.3.1) plus the following additional questions:

9. In what ways, if any, was the staff room useful?
10. If you were unable to try out the tools in your own practice during the three weeks could you please say why?
11. Would you recommend any changes to the LE?

The 7 interviewees who had not finished the LE were asked questions 9 and 11.

In repeating the questions from the previous interviews, the participants were reminded about what they had previously said about their expectations for the event. This proved to be very useful in jogging their memories and in giving them a point of departure for their answer.

When the questions were asked via Skype® the interview was semi-structured, starting with the above questions and following with an open discussion. The findings emerging from the questionnaire (see section 6.2) were used to prompt the open discussion, for example, concerning the difficulty of some participants in collaborating online and with applying ideas in their teaching practice.

The answers revealing the greatest insight relate to questions 1 and 4, concerning participants' expectations and the role of the tutor/facilitator. These were coded *in vivo* and are discussed in the following sections.

Question 1: experience of the event compared with expectations?

The codes that emerge from the analysis of what the interviewees actually experienced in the event are summarised in Table 6-12. Note that, where possible, the same codes are used as for the analysis of the interviews before the LE (see Table 6-9) in order to allow a comparison of the results. The results show the main perceptions

emerging from the interviewees, rather than a direct comparison of individual perceptions before and after the event (52 teachers were interviewed before and 17 after the LE).

Code	**Frequency** (n=17)	**Example answer**
E Web 2.0 in teaching practice	6 (35%)	'And these tools I used in my classroom everyday' (Lantha, female teacher from Greece)
E Cooperation & collaboration	5 (29%)	'I have learned to cooperate with the other group mates' (Sorina, female teacher from Romania)
E Share experience	4 (24%)	'I was able to share my experience with my partners' (Roberta, female teacher from Romania)
E Meet other teachers	3 (18%)	'i met other etwinners, saw their work, their abilities, and wanted to do better, to reach their levels' (Adelpha, female teacher from Greece)
E Web 2.0 and tools	3 (18%)	'I already knew some parts of the technology of the tools that we had to use but not all, so I learned something new' (Zeta, female teacher from Italy)
E Digital skills and competence	2 (12%)	'Attitude, how to cope with the technology, for example' (Zeta, female teacher from Italy)
E Make friends	2 (12%)	'i made friends with whom we still have contact (from my table but also from other tables)' (Adelpha, female teacher from Greece)
E Ideas for future collaboration	1 (6%)	'ideas for future working together came up' (Adelpha, female teacher from Greece)

Table 6-12 Second LE: coding results for interviews after the LE: what did you actually experience with the event?

Before the LE, the interviewees mainly expected to learn about using the web tools per se (48%) with fewer expecting to learn about using the tools in their teaching practice (38%). After the LE, few interviewees referred to just learning about the tools (18%), whereas expectations for using the tools in their practice were largely met (35%), as the following comment illustrates.

> I use them [the tools] in the classroom with my students. I ask them to write about Christmas, about their holidays, something like that to practice their language… This is something new, I hadn't done it before. (Zeta, female teacher from Italy)

Similarly, whereas few had expected to experience cooperation and collaboration with their peers before the LE (8%), in reality many did (29%). Expectations for sharing information with peers were largely met and the comments suggested that this aspect was very much appreciated. They highlighted that such cooperation does not always happen within their school or their region, and cooperation across countries provides new insights into cultural differences.

> I had chance to talk to other teachers, inter-personal things or conversations, not only the tools but also the chance to talk with teachers from other countries because they can have another view. (Lantha, female teacher from Greece)

> I have much more contact with my colleagues in eTwinning than with my colleagues at school, so this is a fact. (Zeta, female teacher from Italy)

Overall, the results suggest that the LE was more concerned with situated learning, in practice and in collaboration with peers, than most participants had originally expected.

Question 4: experience with the tutor/facilitator compared with expectations?

The codes that emerge from the analysis are summarised in Table 6-13; where possible the same codes are again used as for the analysis of the interviews before the LE (see Table 6-11).

Before the LE, the interviewees mainly expressed the expectation that the tutor/facilitator would offer guidance and moderation (38%), provide instruction and didactic materials (33%), and would help with solving problems (33%). In reality, they noted that the tutor/facilitator was present (24%) and was organising the activities (24%), however there was no mention of instruction (0%) or suggestion that it was missing from the event.

Guidance and support were offered by the tutor/facilitator, however the comments suggest that mutual support was also offered by peers, as the following extract from the interview with Sorina illustrates (she refers to her peers as mates).

Sorina: I didn't need the help of the facilitator.
Interviewer: So where did you get help when you needed it?
Sorina: From the mates, especially from the mates.

(Sorina, female teacher from Romania)

Code	**Frequency** (n=17)	**Example answer**
T Presence, availability	4 (24%)	'you were always available for help and you never left a post without a comment. That gave a feeling that you were really enthusiastic about what you were doing and showed how we should behave in that LE' (Beata, female teacher from Poland)
T Organise the LE activities	4 (24%)	'The tutor organised the work in a rational and comprehensible way. The tasks were stimulating enough and we didn't have to wast our time by looking for folder or by asking each other what is to do now?' (Annalisa, female teacher from Italy)
T Help & problem solving	2 (12%)	'I think I asked Tiina some questions and I got immediate answer and I read your comments in the forum' (Edita, female teacher from the Czech Republic)
T Guidance & moderation	2 (12%)	'I thought your presence was very well balanced' (Lenuta, female teacher from Romania)
T Support from peers	2 (12%)	'I also had a chance to talk to other teachers from other groups via forums and via this online' (Edita, female teacher from the Czech Republic)
T Teach, provide materials and knowledge	0	

Table 6-13 Second LE: coding results for interviews after the LE: what did you actually experience with tutoring/facilitation?

Overall, the results suggest that tutoring and facilitation was less focused on instruction and solving problems than expected by participants, and more focused on preparing the activities, on being present and on intervening when needed. Mutual support from peers was appreciated by participants and was seen as complementing the guidance offered by the tutor/facilitator.

The remaining questions 2, 3 and 5 to 8.

The answers to the remaining questions were often rather brief but nevertheless concurred with several points raised in the questionnaire.

Teaching practice: the interviewees highlighted how they applied the tools in their teaching practice and the benefits they saw for the pupils in terms of their being more creative and engaged, as the following comment illustrates.

> it helped me the way i expected it. bringing up new things, makes my students want to pay attention. and they really liked that a teacher of them knows some things that they dont!! (Adelpha, female teacher from Greece)

The interviewees also saw the benefits in terms of connecting with their pupils and understanding their learning needs.

> It helped me to know my pupils better. I found out that some of them do not know how to create an account but others had some more abilities to use the programme to work on the computer. It helped me to know my pupils and their abilities in computers. (Sorina, female teacher from Romania)

Applying ideas in practice helped the interviewees to become more confident, to be more engaged in what they were doing and to develop their own competence by trying things out in situ.

> I would say that it has given me the confidence to start up getting skilled … what I think is that unless you use immediately what you have just learned, it is quite difficult just to build up your ability. (Rosina, female teacher from Italy)

> I become more competent in deciding what I can use in my classroom … Because the other labs were really boring. I don't want only to read something, only

> theory, theory is not enough for me. I want practice. (Lantha, female teacher from Greece)

Social contacts: the interviewees confirmed the importance of the social contact. It helped them to become more confident, more self-assured and gave them a feeling of belonging.

> Social contacts turned out to be very important for me …for the discussion of the work being done and getting feedback. (Beata, female teacher from Poland)

> the social contact … helped me so much, i opened up and were more sure of myself, and not feeling week of my beeing a beginner (sic). so it was very important to me. (Adelpha, female teacher from Greece)

Overall the comments suggest that social contact was informal but nevertheless business-like and was focused on achieving the activities. It helped people to feel connected and confident.

Collaboration: the comments from interviewees reflect the feedback given in the questionnaire, namely that collaboration (when it worked) was perceived positively and that the participants now understand better the benefits of working together online.

> I saw that other partners work more, know more things than me, gave me more ideas how to collaborate, how to make interesting my classroom. It was really fascinating and we had incredible collaboration and experience. (Lantha, female teacher from Greece)

> now i know. it's even better than live collaboration, because everyone can do their part on their own time, get back to things or get help from so many different people when needed. (Adelpha, female teacher from Greece)

There was recognition of the differences in expertise between the participants, with some being quite experienced in the tools being used and others being complete beginners. Yet this was seen as a strength rather than a weakness and they offered each other mutual support.

> I read all the comments on the forum, you know, every night. Because they were really interesting. I learned a lot … from each partner. When I saw they were a little lost (azure team) I invited them to join our forum, team. This led to a great team together. (Roberta, female teacher from Romania)

> … a lot of understanding from the experienced to the beginners, which amazed me, cause i thought they would regard us as weight that pulls them back. (Adelpha, female teacher from Greece)

> In my group, we knew each other, all of us, we knew each other and also we knew our strengths. And in the group, during the activities, each of used our strengths to the benefit of the group. (Lenuta, female teacher from Romania)

There was also a sense of realism from some interviewees of the limitations of online collaboration and of what one should expect from busy school teachers.

> First I expected a more active kind of collaboration within the group, but then realized that I couldn't expect that as everybody had their duties and different lg [learning] abilities, teaching experience etc. So I stopped expecting and went on doing whatever I could. (Beata, female teacher from Poland)

Overall the comments reflect a more mature and informed view of collaboration than we saw in the first LE. Where participants did not have a positive experience with collaboration, the comments nevertheless suggest that they understood why and that they still saw this as a positive learning experience.

Community: the interviewees perceived a sense of community and of the community becoming stronger, as the following comments illustrate:

> That's what I felt, to be part of the community. It was a feeling like, I am at home… I felt comfortable. (Sorina, female teacher from Romania)

> I believe that in some groups closer contacts were built as the course unfolded. It seems to me that people became more open and eager to help when they got hold of how things worked in such events. (Beata, female teacher from Poland)

> every day when i open my compouter, the first thing i do is to check out if the LE platfrom is still there. and i feel relieved it still is. … the sense of this community is something i miss now. (Adelpha, female teacher from Greece)

There were also some cautious views expressed about the limitations of the LE being considered as a community.

> I suppose I still can't feel the web community as a real community, because I found it really difficult to even put myself in the situation, in the position of asking something to someone. (Rosina, female teacher from Italy)

There were comments that illustrated the disappointment of participants who were posting messages in a community that was dying off once the last activity had been completed.

> I could spot quite a few messages from people having just got used to it, to the idea of being at the PC every day, may be twice a day, say for half-an-hour, and then at the end there were messages of people asking for help saying "what is going to happen now?", "are we being left on our own?", "is it finished?". (Rosina, female teacher from Italy)

Final reflection: the purpose of the period for trying out the tools in practice and for the final reflection appeared to be well understood and appreciated. The comments suggest that it inspired them to move forward and become more expert in the use of the tools for teaching.

> i met other etwinners, saw their work, their abilities, and wanted to do better, to reach their levels. (Adelpha, female teacher from Greece)

There was evidence of metacognition in the comments, with several participants extrapolating their own personal experiences as learners in an online community to what they would need to do in a similar environment for their pupils.

> When I think about the collaboration I realise now, that the feeling between the students is an important aspect and it can make the work easier or more complicate. (Annalisa, female teacher from Italy)

For some interviewees the process of reflecting on what they had done, summarising and discussing it with peers was a totally new experience. It was not part of their normal way of learning: 'Not here in Romania. It's not natural for me' (Lenuta, female teacher from Romania). Others indicated that they could see the value of the final reflection activity, however they had not contributed to the discussion personally as they had not felt sufficiently confident or experienced. They nevertheless spoke highly of what they had learnt from reading the contributions of others (lurking).

Overall the comments concur with results from the questionnaire that the final reflection was useful for reflecting on experience, sharing knowledge and thinking about the wider consequences of what they had learnt (metacognition). It was a new experience for some participants and, whereas some felt unable to contribute personally to the discussions, the feedback suggests that they still learnt through the experience of others.

Question 9: In what ways, if any, was the staff room useful?

The interviewees indicated that the staff room was a stable place for them to visit, to re-orientate themselves and to check on progress with the other members of the team.

> Yes, I found myself going very often back to the staff room just to be able to understand what was going on. (Rosina, female teacher from Italy)

The staff room was a place where the participants could seek support and guidance from peers. It was a place to share emotions, concerns and achievements.

> I think it was the best idea. Because three times when I had problems, … I met people who would be able to share my ideas my opinions to get some advices. (Roberta, female teacher from Romania)

> most of my time was spent in the staff room, to get ideas, to get support, and to feel proud and happy when my work got commented on. (Adelpha, female teacher from Greece)

> If I'm not mistaken, it was used for sharing our feelings and reflections on what we've done. So it was useful - at least for those of us who had doubts about what they were doing or wanted to tell us what they'd achieved. (Beata, female teacher from Poland)

The rich variety of experience, cultures and background amongst the participants in the small groups was seen as a real advantage. Some teachers noted that such cooperation was appreciated notably because it does not always happen in their own school or in their region. However, interviewees also recognised that it required extra time and effort to visit the staff room, to read the messages and to give feedback to colleagues. When collaboration was not very successful, this was perceived by some as an extra burden.

Overall, the interviewees perceived the benefits of the staff room, in terms of sharing information, obtaining mutual support and organising team work. It offered both practical and emotional support, which was particularly useful for those who were less experienced or simply needed to be reassured. The longevity of the forum made it a more stable and reliable place. Nevertheless, if a team was not collaborating and colleagues were not active, then the staff room was less useful and may have even been perceived as an additional burden.

Question 10: If you were unable to try out the tools in your teaching practice during the three weeks could you please say why?

Whereas many participants were able to try out what they were learning in practice, this question received many responses highlighting practicable problems associated with finding the time, applying innovation in everyday teaching practice, lack of experience and confidence, etc. Some teachers commented that they had to make real sacrifices in order to apply what they were learning, on top of their other teaching commitments, and yet many did so and appreciated it.

Question 11: Would you recommend any changes to the LE?

This question provided an opportunity for participants to offer an opinion on how something may be changed in future LEs of a similar nature. Some of the ideas proposed had resonance with the messages coming out of the earlier questions, such as the need to encourage collaboration and for this to be a requirement in order to receive a certificate.

6.3.3 Summary of results from the interviews

Interviews prior to the second LE suggested that participants mainly expected to learn about the Web 2.0 tools per se and how they might be applied in their teaching practice. They expected to meet other teachers and to share experience and ideas with them. Few expected to cooperate and collaborate online and fewer expected their peers to offer them mutual support. Most interviewees expected the tutor/facilitator to guide, teach and moderate their activities, providing expert knowledge and solving problems. Few interviewees were able to articulate what they expected from social interaction and the community.

The interviews after the LE suggest a change in the perception of the interviewees. They talked about how they had applied the tools in their teaching practice and the benefits they had seen for their pupils' learning. Collaboration had generally been successful and there was greater understanding of why collaboration does not always work in practice. The interviews reflected an appreciation of the benefits of learning with peers and of receiving mutual support. Tutors were perceived as present and available when needed, with no suggestion that they were responsible for teaching or offering expertise. Social interaction was perceived as positive, supporting the collaboration and learning, and a sense of community appeared to develop over time. The staff room and the round tables were perceived as engendering a good team spirit and as offering a stable place to seek support from peers. The final reflection activity was perceived as helping the interviewees to share their experience and to learn from others. Overall, the changes made to the LE were appreciated, however the interviewees noted the extra effort required and concerns were raised by some interviewees about the impact on their learning when collaboration fails.

The findings are further discussed in section 8.1 and reflections on the use of interviews are provided in section 8.2.3.

Chapter 7 Research Findings from the Second Cycle: Online Discourse

This chapter presents the findings from the second cycle of research that concern the analysis of the online discourse in the discussion forums of the second Learning Event (LE). The data were extracted and the messages coded using the schemes proposed for the Community of Inquiry (CoI) theoretical framework, as discussed in section 3.2.4. The results are summarised in section 7.3 and subsequently discussed in Chapter 8.

Approximately 2500 participant and tutor messages were posted in all of the discussion forums of the LE during the duration of the event; an increase of 14% compared with the first LE (Sarisalmi, 2010a). Of these, approximately 1200 (48%) where in the staff room forums (Sarisalmi, 2010b). These messages offer a potentially rich insight into the participants' discourse, the nature of their interactions with each other and the development of their thinking over time.

As discussed in section 3.2.4, data were analysed quantitatively for all the messages posted in the staff room and qualitatively for a subset of participants across all forums. The results of the analysis are presented in the following sections.

7.1 Distribution of messages over time in the staff room

All the messages from the staff room were extracted, coded in the CAQDAS and analysed over time, as discussed in section 3.3.2. The aim of this analysis is to explore relationships between the frequency of participant and tutor messages, the cognitive activities and the development of the community.

The distribution of participant and tutor messages over time is illustrated in Figure 7-1; the colours of the various activities correspond with those presented in the schedule for the LE in Figure 5-1. This distribution suggests that the frequency of participant messages is very much linked to the timing of the cognitive activities and to the contribution of the tutors. For example, the welcome activity involved participants introducing themselves to one another at their round tables. This was launched by an invitation from the tutors, and there is a corresponding burst of activity during this period. The frequency of contribution then rapidly drops off as they start the next activity, but rises again as they share the results with one another,

prompted by the tutors. There is a similar burst of activity during the third stage of the LE, the final reflection.

The results suggest that the contribution of the participants to the discussion forums was initially influenced by those of the tutors. However, towards the end of the LE, the participants exhibited greater autonomy; this coincides with the increase in mutual support and a stronger sense of community suggested by the interviewees (see section 6.3).

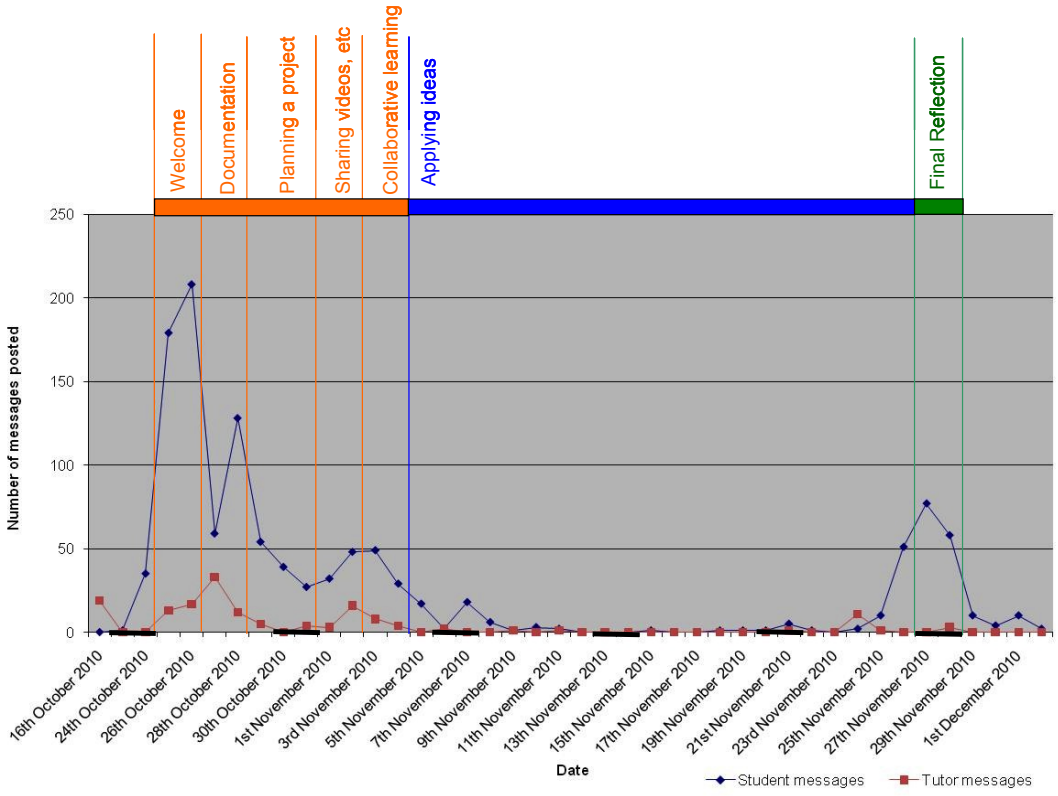


Figure 7-1 Second LE: distribution of participant and tutor messages over time in the staff room

The distribution illustrated in Figure 7-1 shows that once the cognitive activities had been completed, and the participants had moved on to applying ideas in their own teaching practice, there was little interaction in the staff room. This was despite participants being encouraged to stay in contact in the staff room during this period. The dialogue then restarted for the final reflection, but died off again quickly when the activity had finished.

The results suggest that the discussion in the online community of the staff room was purposeful and primarily focused on achieving the activities. Consequently, the online community was ephemeral and was active for as long as it served the purpose of learning.

7.2 Coding of selected participants' messages across all forums

As discussed in section 3.2.4, the messages in all the online discussion forums were analysed for the subset of participants who were interviewed at the end of the LE (see section 6.3) and who had been active in the final reflection activity. The characteristics of these seven participants are summarised in Table 7-1.
The aim of this analysis is to look for evidence of cognitive development in the online discourse of the participants and to gain insight into their teaching and social presence.

Country	***Gender***	***Experience with Web 2.0***	***Experience with online collaboration***
Czech 1 Greece 2 Italy 1 Romania 3	Female 7 Male 0	Complete beginner 3 Some experience 4	Complete beginner 2 Some experience 5

Table 7-1 Second LE: characteristics of the participants whose messages were coded across all forums

Table 7-1 illustrates that all seven participants were female. This represents a potentially small gender imbalance: given that the gender balance of the LE in general was approximately 88% female and 12% male, according to the respondents of the questionnaire, see section 6.2.1. The impact of gender is discussed further in section 8.2.3.

The codes employed for cognitive, social and teaching presence together with their total frequency for all seven participants and examples of their use are presented in Table 7-2, Table 7-3 and Table 7-4, respectively. The code 'Other' was used when none of the standard codes defined by the CoI model seemed appropriate (outliers). The codes or categories suggested by the CoI coding scheme are discussed in the review of the literature in section 2.2 and summarised in Table 2-1.

The results of the message coding are summarised for each participant in Table 7-5 and discussed in the following sections.

Code	Frequency *	Example answer
Cognitive presence (Garrison et al., 2001)		
C1 Triggering event	160 (23%)	'Very nice presentation. We can go on with it on wiki space.' (Sorina, female teacher from Romania)
C2 Exploration	67 (19%)	'Our outputs were mainly in PowerPoint. We presented our work at the meetings and evaluated it at school during Business English lessons. I hope I helped you a bit. What are your plans for the project?' (Edita, female teacher from the Czech Republic)
C3 Integration	32 (9%)	'Hi Renato, I also want to start a class blog with my students. Here we could document our activities by uploading different materials, like videos, slideshows, presentations and so.' (Annalisa, female teacher from Italy)
C4 Resolution	9 (3%)	'I have learnt - and I recommend this to other teachers of course - that we should understand and use the software ourselves first and at the same time understand and employ the best pedagogical approach to presentation of the subject matter, defined curriculum (including topics to be covered) using the technology to meet teaching objectives and skill standards.' (Lenuta, female teacher from Romania)
C0 Other	81 (23%)	'I am very happy you are our moderator ! Keep in touch' (Roberta, female teacher from Romania)

** Total number of times the code was used (and % of all messages) for all seven participants*

Table 7-2 Second LE: codes used to analyse the cognitive presence

Code	Frequency *	Example answer
Social presence (Rourke et al., 2001a)		
S1 Emotional expression	35 (10%)	'I like the welcome greeting … it´s very catching.' (Edita, female teacher from the Czech Republic)
S2 Group cohesion	129 (37%)	'i wanted to tell you i felt lucky to work with you and have you in my group. we were both beginners so that made me feel a bit better' (Adelpha, female teacher from Greece)
S3 Open communication	166 (48%)	'hello Liv-Ellen, i want to ask you what you mean by cool stuff? something new or something unknown?' (Lantha, female teacher from Greece)
S0 Other	19 (5%)	'I have posted a new page on my blogspot where I added a video' (Roberta, female teacher from Romania)

** Total number of times the code was used (and % of all messages) for all seven participants*

Table 7-3 Second LE: codes used to analyse the social presence

Code	Frequency *	Example answer
Teaching presence (Anderson et al., 2001)		
T1 Design and organisation	8 (2%)	'Dear colleagues in the pink group, Let us start by writing down our email addresses so that we can build that common google doc together.' (Lenuta, female teacher from Romania)
T2 Facilitating discourse	82 (23%)	'Great job, Lenuta I also like the motto you've added. I also saw that you uploaded the link. You are really fast. Congratulation.' (Sorina, female teacher from Romania)

Cont.

T3 Direct instruction	43 (12%)	'Slide Share is also very useful, in order to share ppt presentations. You have just to create an account, then you can upload your presentation and get the embed code and paste it in your twinspace or blog.' (Annalisa, female teacher from Italy)
T0 Other	216 (62%)	'While doing these activities on Web 2.0, I have a question concerning this web space where we are working now. Will it stay open after we´ve finished this event?' (Edita, female teacher from the Czech Republic)

** Total number of times the code was used (and % of all messages) for all seven participants*

Table 7-4 Second LE: codes used to analyse the teaching presence

7.2.1 Lenuta

Lenuta is a 36-45 year old teacher from Romania who teaches English as a foreign language to children between 11 and 16 years old. She declared that she has some previous experience of using Web 2.0 tools and of collaborating online; indeed, she participated in the first LE.

The results for the coding of cognitive presence (see Table 7-5) suggest that Lenuta stayed in the lower stages of cognition for most of the cognitive activities, with many messages showing no cognitive presence at all (56% of messages) or at the lowest triggering event level (28%). However, she demonstrated critical thinking during the final reflection activity (messages 30-32), as represented by the higher levels of integration and resolution, as illustrated in Figure 7-2.

	Frequency													
	Lenuta		Adelpha		Annalisa		Sorina		Edita		Lantha		Roberta	
Cognitive presence														
C1 Triggering event	9	**28%**	13	**33%**	8	**35%**	13	**52%**	11	**33%**	14	**78%**	92	**52%**
C2 Exploration	2	6%	13	**33%**	8	**35%**	2	8%	7	21%	2	11%	33	19%
C3 Integration	2	6%	4	10%	2	9%	3	12%	10	30%	1	6%	10	6%
C4 Resolution	1	3%	0	0%	2	9%	1	4%	2	6%	0	0%	3	2%
C0 Other	18	56%	10	25%	3	13%	6	24%	3	9%	1	6%	40	22%
	32	*100%*	*40*	*100%*	*23*	*100%*	*25*	*100%*	*33*	*100%*	*18*	*100%*	*178*	*100%*
Social presence														
S1 Emotional expression	0	0%	6	15%	0	0%	2	8%	2	6%	1	6%	24	13%
S2 Group cohesion	6	19%	12	30%	7	30%	20	**80%**	8	24%	11	**61%**	102	**57%**
S3 Open communication	20	**63%**	21	**53%**	16	**70%**	3	12%	20	**61%**	4	22%	45	25%
S0 Other	6	19%	1	3%	0	0%	0	0%	3	9%	2	11%	7	4%
	32	*100%*	*40*	*100%*	*23*	*100%*	*25*	*100%*	*33*	*100%*	*18*	*100%*	*178*	*100%*
Teaching presence														
T1 Design and organisation	1	3%	0	0%	3	13%	1	4%	0	0%	0	0%	3	2%
T2 Facilitating discourse	6	**19%**	6	**15%**	5	**22%**	7	**28%**	18	**55%**	4	**22%**	36	20%
T3 Direct instruction	0	0%	0	0%	2	9%	1	4%	2	6%	0	0%	38	**21%**
T0 Other	25	78%	34	85%	13	57%	16	64%	13	39%	14	78%	101	57%
	32	*100%*	*40*	*100%*	*23*	*100%*	*25*	*100%*	*33*	*100%*	*18*	*100%*	*178*	*100%*

The highest frequencies of each code (excluding Other) are indicated in bold for each presence and for each participant. All figures are rounded.

Table 7-5
Second LE: summary of message coding for the seven participants analysed

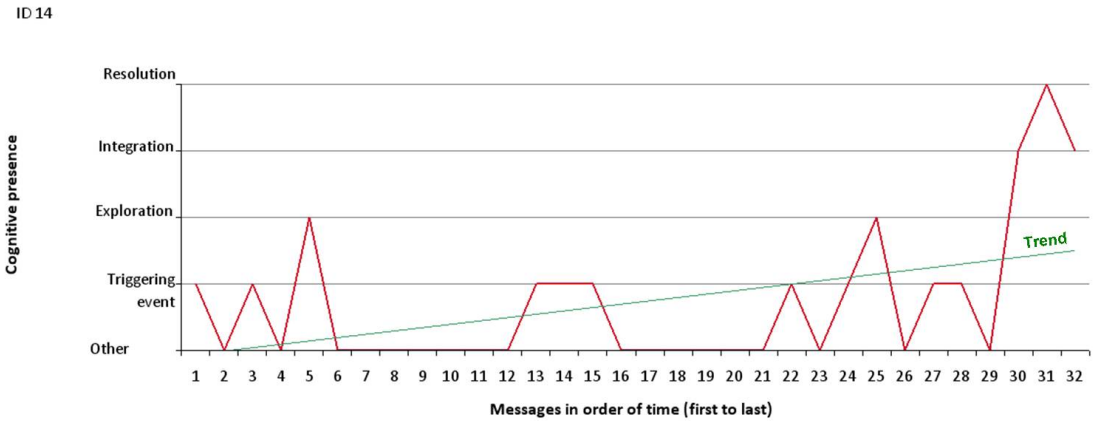


Figure 7-2 Second LE: coding of cognitive presence over time for participant Lenuta

Lenuta's social presence was relatively high, demonstrating open communication (63% of messages) and group cohesion (19%). As she had already participated in the first LE, it may have been that her focus was not on the cognitive activities. Indeed, in registering for the LE she suggested that her main interest was in the way in which the LE was organised. On the other hand, the low cognitive presence may also be due to the lack of collaboration in her group. A closer inspection of the discussion in her forum reveals that there was a lot of chit-chat centred on the topic of the 'pink panther' (her group was allocated the name Pink). The lack of focus of her group on the cognitive activities and the superficial discourse in the early stages may be due in part to a lack of teaching presence (Anderson et al., 2001). Though Lenuta herself exhibited some teaching presence, trying to steer the group by facilitating discussion, it was relatively low (19% of messages).

The lack of group collaboration meant that Lenuta did not have much opportunity to demonstrate higher levels of cognition in her discourse with her peers. This does not mean, however, that she did not undergo critical thinking, but rather that there is little evidence of this in her discourse. In her final interview, she placed a lot of emphasis on the tutor presence and on the preparations for the course. She suggested that tutors should have an overview of each participant's availability and should allocate groups accordingly. She also suggested that collaboration should be mandatory otherwise one should not receive the final certificate. This suggests that she was expecting more of a formal course with more significant teacher presence at times of difficulty.

The discussions in the staff room with her peers seemed not to have been very successful for Lenuta. In the questionnaire she indicated that the interaction remained

formal, that it did not really help collaboration and that she did not find the objectives of the staff room to be very clear. In the questionnaire she also indicated that she did not learn much from sharing her experience with others in the final reflection, and yet she found the period for trying out her ideas and for reflection very useful. This was perhaps explained in the interview, where she commented on the fact that reflecting and sharing in practice is not something that is normally done in her country: 'Not here in Romania. It's not natural for me' (Lenuta, final interview). This highlights possible differences in educational background and is a reminder that some learners' previous experience of reflection and critical discourse may be limited.

In conclusion, the analysis of Lenuta's messages suggests that she has a quite traditional, formal approach to learning which may have been influenced by her past experience of education. Her interviews indicated that she has high expectations of the tutor in terms of guidance and support, and this is reflected in her own teaching presence being quite low. She appeared not to be very competent in online collaboration, despite her previous experience. Her messages indicate that she learnt mainly on her own in this LE and she was unable to handle the inability of her group to collaborate effectively. Although she demonstrated high social presence via open communication, she did little to encourage group cohesion. This concurs with the results of her interview where she suggested measures to enforce collaboration rather than encourage the community to grow. As her group did not collaborate successfully and there was low teaching presence, the discourse remained at a rather superficial level and her messages only showed critical thinking during the final reflection.

7.2.2 Adelpha

Adelpha is a 36-45 year old teacher from Greece who teaches German and Greek history to children between 11 and 16 years old. In registering for the LE, she declared herself to be a complete beginner for Web 2.0 tools and online collaboration, and a newcomer to eTwinning.

The results for the coding of cognitive presence (see Table 7-5) suggest that Adelpha spent a lot of her time triggering conversations (33% of messages) and exploring ideas (33%). However, she showed some levels of critical thinking in the final reflection as she built upon the ideas of others and integrated her own experience (10%), as illustrated in Figure 7-3.

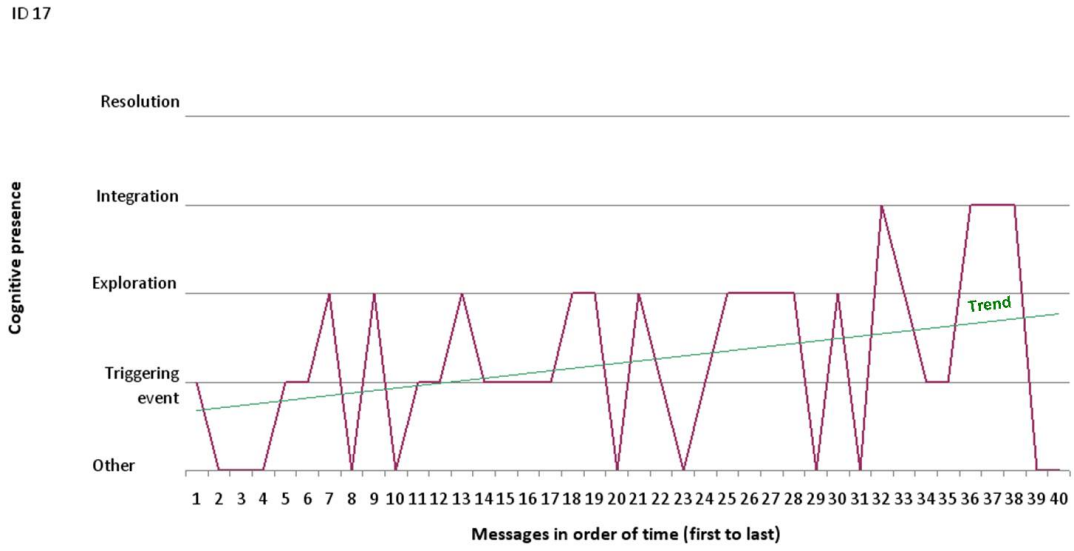


Figure 7-3 Second LE: coding of cognitive presence over time for participant Adelpha

Adelpha's messages were longer and more complete than those of most other participants; she tended to use full punctuation and applied grammar as if she were writing a letter rather than writing in a forum. This suggests a person with little experience of collaborating online. Indeed in her opening message she indicated:

> i was atteding a seminar at the goethe institute in athens, when i heard for the first time the term 'digital natives' being used for my student's generation, and the term 'digital dinosaur' for my generation (better speak for myself here, so i felt like the dinosaur of this story). that shocked me and i felt i owed it to my students and me [to learn more]. (Adelpha, forum message number 1)

Adelpha showed a high level of social presence with messages reflecting open communication (53%), that encouraged group cohesion (30%) and that expressed emotion (15%). On the other hand, her teaching presence was low compared with the other six participants and was primarily concerned with facilitating discussion within the group (15%).

In the questionnaire, Adelpha indicated that she felt only a bit more confident and competent in using the tools for her own teaching practice and for collaborating online with her pupils. During the period for applying ideas in practice, she was unable to try out what she had learnt; she indicated that this was due to a very hectic period in her life and a lack of time. However, she did find it useful to share her experience with

others in the final reflection and learnt a lot from reading about the experience of others – this concurs with the coding of her messages which suggest critical thinking in the final reflection (Figure 7-3). Moreover, her reaction to the comments of others suggested that she too had changed as a result of this experience.

> i also feel we belong to a different type of teacher now, the ones who ask for more, the ones who are not afraid to admit they dont know something but they'll look into it, who are not afraid to learn something new, even if they fail in the beginning.
> when i admitted to my students, that i dont know the tools for our etwinning project but i'm learning at the moment, they were impressed, and they told me they liked that a teacher admitts: 'i dont know'. it makes us look human. so they said...
>
> (Adelpha, part of message 37, final reflection in the staff room)

Adelpha's comments reflect two important issues that emerge from the analysis. Firstly, the school teachers' attitudes seem to have been influenced positively by their experience in the LE. This is an important part of competence development (Guskey, 2002), as suggested by the teachers themselves in the questionnaire on competence (see section 6.2.7.). Secondly, the feedback that the school teachers received from their pupils when applying technology in practice had a significant impact on the teachers' motivation to continue learning and innovating (Ottenbreit-Leftwich et al., 2010).

Adelpha indicated in her final interview that she preferred to work in groups, rather than independently, and enjoyed mostly posting messages to give feedback to others – this concurs with her messages in the forums which reflect high cohesion and facilitation.

In conclusion, the analysis of Adelpha's messages supports her assertion that her competence in the use of Web 2.0 tools developed as a result of the LE, with her cognitive presence reflecting critical thinking towards the end of the LE. Whereas she indicated that her competence in using these tools in her teaching practice developed less, the results suggest that her attitude developed positively and she was motivated to learn more, which are important aspects of competence development. Adelpha enjoyed collaboration, benefited a lot from the support of others and enjoyed the intimacy of smaller groups. She was very sociable, found the staff room very useful and this was illustrated by a high level of social presence. Her teaching presence was low and focused mostly on facilitating cohesion within the group. This is consistent with her being a complete beginner and lacking the experience to offer guidance to others.

7.2.3 Annalisa

Annalisa is a 46-55 year old teacher from Italy who teaches German to children between 11 and 16 years old. She declared before the LE that she had some previous experience of using Web 2.0 tools and of collaborating online.

The results for the coding of cognitive presence (see Table 7-5) suggest that Annalisa spent a lot of her time in the lower levels of cognition, triggering conversations (35% of messages) and exploring ideas (35%). However, she showed some levels of critical thinking (18%) both at the start of the event and towards the end in the final reflection, as illustrated in Figure 7-4. During the initial welcome activity, she responded to the introductions of fellow participants by recounting her past experience of Web 2.0 tools and in one case by offering a practical solution to a problem (message 3). This is consistent with her philosophy for learning, as she expressed before the LE started:

> I know I can learn much from my fellow participants because each of us brings to the group his/her specific experience. (Annalisa, initial interview before the start of the LE)

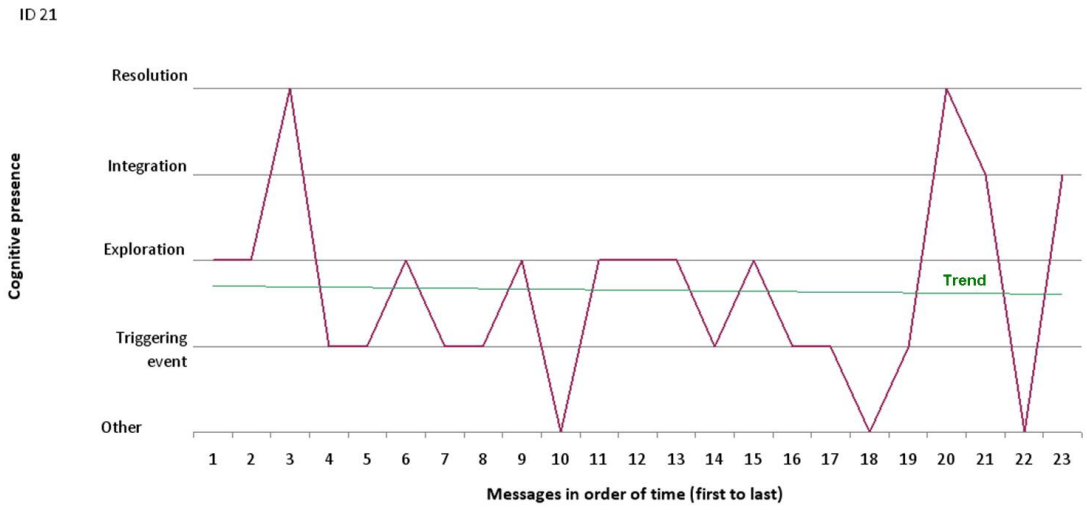


Figure 7-4 Second LE: coding of cognitive presence over time for participant Annalisa

In the final reflection, Annalisa explained to her peers the positive impact of trying out the tools on her teaching practice and the advantages for her pupils, demonstrating critical thinking.

> I think the tools I used supported my teaching practise very well ... it was easier to catch the students' attention and also to arouse their curiosity about their peers work. (Annalisa, part of message 20 in the final reflection)

Moreover, whereas the coding of Annalisa's messages for cognitive presence does not show a clear positive trend (see Figure 7-4) and is therefore inconclusive regarding competence development, a closer inspection of her discourse in the final reflection reveals evidence of metacognition. She connected her learning during the LE with wider consequences for her teaching practice. This concurs with the assertion that she made in her final interview that her competence had indeed developed as a result of the LE.

> My competences are now of sure much better. I had in fact the opportunity to practice by using the tools during the collaboration with my colleagues … After this challenging experience I feel more confident and I'm going to go the same way with my students. (Annalisa, final interview)

Annalisa responded to the reflections of other participants, building upon their ideas. Indeed, the coding of social presence indicates that she was very open in her communication (70% of messages), generally referring by name to other participants and showing that she was receptive to their ideas. She also demonstrated teaching presence by facilitating and encouraging the dialogue in the forum (22% of messages) and by helping to organise the group's work (13%).

Collaboration seems to have gone well for Annalisa and was perhaps helped by her proactive, supportive role as shown by her strong teaching and social presence.

In conclusion, the results support Annalisa's assertion that her competence developed positively as a result of her participation in the LE. She clearly benefited from trying things out in practice, seeing the positive results of her changes, and from the shared reflection with her peers. She had the strongest social presence of the seven participants analysed and one of the highest teaching presences, meaning that all three presences were overall well balanced. This may have contributed to her successful collaboration which in turn may have been helped by the fact that she had some previous experience of collaboration.

7.2.4 Sorina

Sorina is a 36-45 year old teacher from Romania who teaches English to children between 14 and 19 years old. Before the LE started, she declared that she was a complete beginner when it came to using Web 2.0 tools and collaborating online.

The results for the coding of cognitive presence (see Table 7-5) suggest that Sorina gradually moved from the lower levels of cognition, triggering conversations (52% of messages) and exploring ideas (8%), to the higher levels of critical thinking, integration (12%) and resolution (4%), during the course of the LE. This evolution in cognitive presence in the context of the LE suggests a positive development in cognition, as illustrated by the trend line in Figure 7-5.

In the early messages (1 to 9), Sorina was mainly welcoming other participants and offering them support. She started triggering ideas and exploring solutions with participants (messages 10 to 16), before offering mainly social replies to the comments of others (messages 17 to 21). This is reflected in her teaching presence with 28% of her messages facilitating discourse and in her social presence with 80% of her messages addressing group cohesion; the highest of the seven participants analysed. Her actions in the discussion forums confirm the importance that she attached in her final interview to social contact and its positive impact on the group.

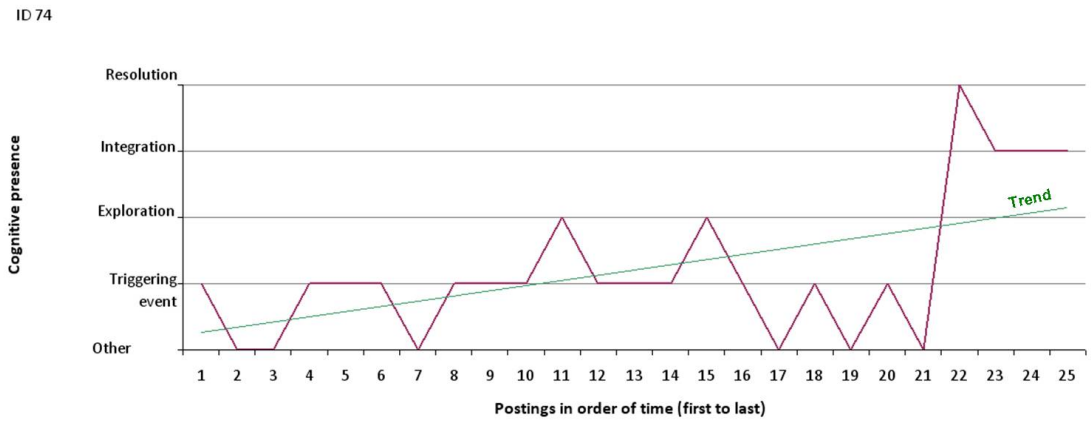


Figure 7-5 Second LE: coding of cognitive presence over time for participant Sorina

In her final messages (21-25), Sorina demonstrated critical thinking and metacognition as she contributed to the final reflection. She talked about how she had

applied the ideas in her teaching practice and the challenges that she faced. She also reflected on what she had learnt from the experience, as illustrated in the following comments.

> *Explain how the tools supported or changed my teaching practice. For example, how did they affect my pedagogical approach?*
> The tools helped me to understand better my pupils and my pupils' needs. They helped me combine the traditional paper format with the new electronically ones for as long as my pupils need it.
>
> *What would I recommend to other teachers?*
> Not to give up, but find alternative solutions in order to reach their purpose.
>
> *What are the implications for my own professional development?*
> I practiced lots of the proposed tools and I have a large variety from which I can choose the ones proper for my classwork or project activities.
>
> (Sorina, message 22, final reflection, italics added to reflect tutor questions)

The above extract from the final reflection also illustrates how the initial prompts from the tutors (in italics) can help the participants to reflect, be critical and demonstrate metacognition in the contributions (Garrison and Arbaugh, 2007).

Sorina's reflections on how she applied the tools in her teaching practice were confirmed in her final interview where she reflected on what she had learnt from her experience of using the tools with her pupils and how this made her feel.

> I feel good, when you see that their ideas [the pupils'] come to life and that they have good ideas and they share their ideas with their mates. It is a new experience for me and when I see that it works, I am very pleased that I was able to take part in this course. (Sorina, final interview)

Her last comment illustrates the impact on her own learning of applying ideas with her pupils and of seeing the impact on their learning (Guskey, 2002). It concurs with the literature which suggests that teaching involves emotional as well as intellectual reflection in the context of everyday teaching practice (Hargreaves, 1998; Boud and Walker, 1998).

In both her forum messages and in her interview Sorina commented on how much she had learnt from her fellow school teachers and how she had tried out for herself some of their ideas.

> I am delighted with what I have learned from you all and I would like to thanks to all of you for sharing your experience with us. (Sorina, message 22)

> The ideas I have learnt on the course, I tried to put into practice. And the experiences [with] pupils, [that] the other mates shared, were interesting and funny and I tried to apply them, not all of them, some of them, but what were interesting for me. (Sorina, final interview)

In conclusion, Sorina was a complete beginner who appears to have benefitted from the LE by being able to try things out in her own teaching practice. She demonstrated a gradual move from cognition to critical thinking in her discourse. She placed a lot of emphasis on group cohesion and appreciated the social ties that developed within her group. The forum data seems to support her assertion that she learnt how to communicate and collaborate better online.

7.2.5 Edita

Edita is a 36-45 year old teacher from the Czech Republic who teaches English and history to children between 14 and 19 years old. Before the LE started, she declared that she had some previous experience of using Web 2.0 tools and of collaborating online.

The results for the coding of cognitive presence (see Table 7-5) suggest that Edita moved relatively quickly from the lower levels of cognition, triggering conversations (33% of messages) and exploring ideas (21%), to the higher levels of critical thinking, integration (30%) and resolution (6%), with 40% of her messages being in the higher levels. This suggests a positive development in cognition, as illustrated by the trend line in Figure 7-6. She was the only participant of the seven analysed to exhibit critical thinking in the activity forums (rather than just in the staff room) where the teaching presence of the tutors was lower.

Edita spent quite a lot of time facilitating the work of her group with 55% of her messages reflecting teaching presence and facilitating discourse, the highest of the seven participants analysed (see Table 7-5). It may be that her previous experience of

Web 2.0 tools and of collaborating online gave her the confidence to carry out this role.

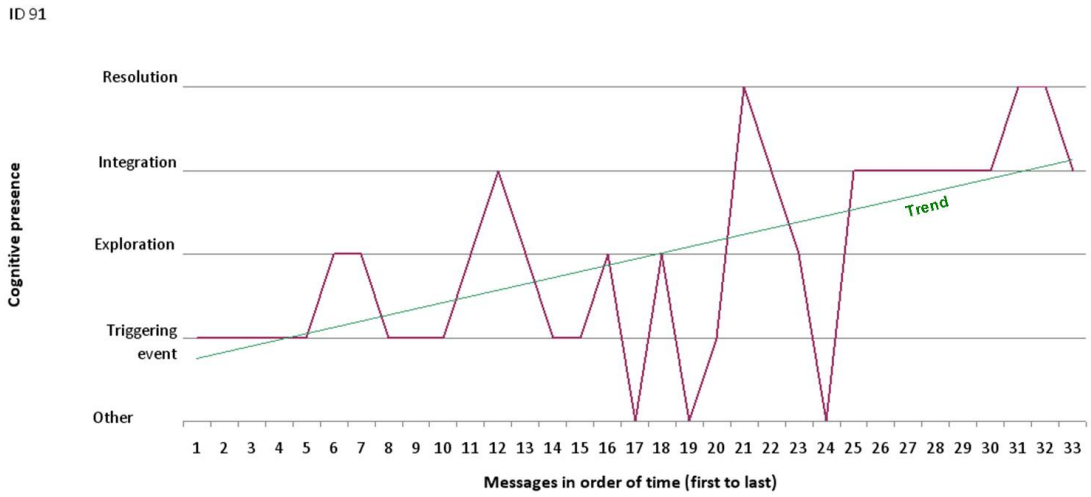


Figure 7-6 Second LE: coding of cognitive presence over time for participant Edita

The importance that Edita attaches to collaboration and sharing with peers is reflected in her contributions to the final reflection, as the following message illustrates.

> What I think is most important for me is collaboration online which we practised a lot and sharing our ideas which might be useful in our future teaching. (Edita, message 33, final reflection)

Similar thoughts were expressed in her final interview where her comments concur with literature that posits the value of teachers collaborating in international communities, exposing them to different ideas and different ways of thinking (Stoll et al., 2007).

> Then I had chance to talk to other teachers, inter-personal things or conversations, not only the tools but also the chance to talk with teachers from other countries because they can have another view. (Edita, final interview)

Edita exhibited a high social presence with 61% of her messages reflecting open communication and 24% being concerned with ensuring group cohesion. In her final interview, she noticed how the less experienced teachers improved their level of understanding in her group as the LE progressed.

> I could see also that our teachers were trying to learn new things. Because in the beginning there were some teachers who didn't know and later they just took part the same as we did. So it was a kind of learning for teachers. I could notice this in our group. (Edita, final interview)

In conclusion, Edita demonstrated high levels of cognition relatively quickly within the forum discussions, relating to her previous experience of Web 2.0 tools for collaboration in her discourse. The results suggest that she further developed her competence in online collaboration and benefited from sharing with her peers. She used her well-developed facilitation skills (as illustrated by the results for teaching presence) and an open approach to communicating with peers (as illustrated by her social presence) to facilitate collaboration in her group.

7.2.6 Lantha

Lantha is a 36-45 year old teacher from Greece who teaches history and literature to children between 14 and 16 years old. Before the LE started, she declared that she had some previous experience of collaborating online but no experience of using Web 2.0 tools.

The results for the coding of cognitive presence (see Table 7-5) suggest that Lantha posted relatively few messages (18 in total) and of these, all except one were at the lower levels of cognition. During her final interview, she indicated that her competence in using tools in her teaching practice improved as a result of the LE. However, the analysis of her messages is inconclusive regarding her competence development, as illustrated by the trend in Figure 7-7.

Lantha perceived herself to be far less experienced than the others in the group, as suggested in her final interview, and this may be why she posted so few messages.

> … there is a big distance between them and me. I didn't know many tools and my partners in other countries is very far away from me. But now I think I have a good plan in my mind. (Lantha, final interview)

Nevertheless, she had no hesitation in learning from others and appears to have benefited by reading their messages. This concurs with the literature which posits the value of peripheral participation (lurking) in online communities (Lave and Wenger, 1991).

I saw that other partners work more, know more things than me, gave me more ideas how to collaborate, how to make interesting my classroom. It was really fascinating and we had incredible collaboration and experience. (Lantha, final interview)

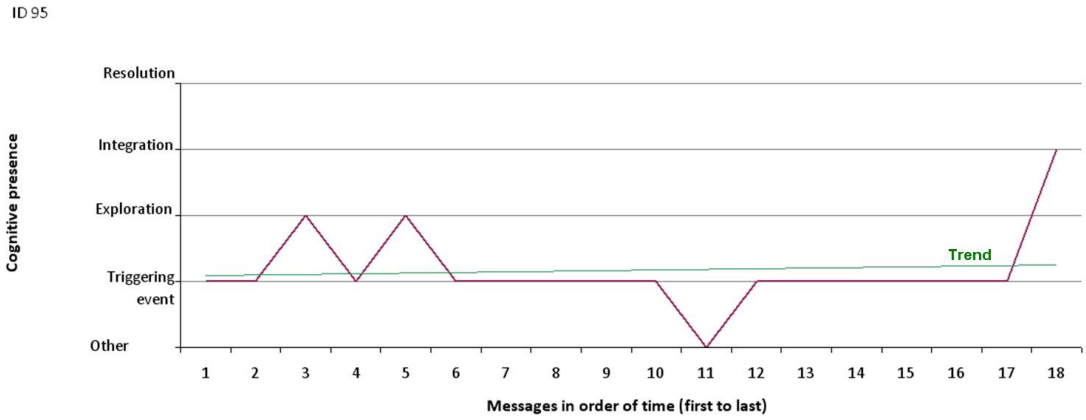


Figure 7-7 Second LE: coding of cognitive presence over time for participant Lantha

Lantha's messages in the forums showed a high level of social presence with open communication (22%) and group cohesion (61%). Indeed, she saw the discussions in the forum as being mainly an opportunity to establish relations with fellow school teachers and learn from them. She had a relatively low teaching presence, with just a few messages focused on the facilitation of other people's reflections (22%).

In the final reflection, Lantha confirmed that she had learnt a lot from the event.

> Hello Purple Group, i'm really glad that i worked with you and i joined this lab, because i have learnt many useful l things- like google docs or creating a blog. i started to work collaborative and i found out that i love google docs and slideshare. (Lantha, message 18)

Indeed, Lantha may have been less active than her peers in the discussion forums, however in her final interview she confirmed that she had been very active at applying her ideas in practice. She was very enthusiastic about what she had learnt and described how she had shared her experience with her colleagues in her school, encouraging them to also try the tools.

> I made a seminar with my partners here in Greece and I transferred these tools to them, the main idea about them. It was very useful, I said that everyday that I am really grateful that I learned so much things. (Lantha, final interview)

The interview with Lantha surfaced cognitive development that was not evident from the analysis of the discussion forum messages. This confirms the value of undertaking research using mixed methods and reminds us that content analysis only considers part of what happens in an online learning community (Enriquez, 2009).

In conclusion, Lantha's belief that she became more competent in the use of Web 2.0 tools for teaching is supported by her comments and her feedback to her peers, but is not supported by the analysis of her discourse in the forum which was minimal and almost entirely at the lower levels of cognition. It is possible that she experienced critical thinking outside of the LE forums and was mainly interested in learning from others (lurking) than actively contributing herself in the LE. She placed a lot of emphasis on applying what she learnt in her own teaching practice and was less interested in discussing her experience in relation to theory. Her lack of involvement in the forum may be due to her being less experienced than her peers and therefore less able to contribute to the discussion.

7.2.7 Roberta

Roberta is a 36-45 year old teacher from Romania who teaches basic subjects to children between 4 and 10 years old. Before the LE started, she declared that she had some previous experience of using Web 2.0 tools and of collaborating online.

Roberta posted more messages than any other participant in the LE; a total of 178 messages compared with the next highest of 90 messages. The results for the coding of cognitive presence (see Table 7-5) suggest that only 7% of her messages demonstrate the higher levels of cognition and critical thinking. However, unlike the other participants analysed, these 13 messages were distributed right across the LE and were not confined to the final reflection which started with message 158 (illustrated in Figure 7-8). This may be a reflection of her previous experience of using the tools, of collaborating online and of participating in other LEs (she previously participated in four different LEs).

When asked what she had learnt from the LE, she replied mainly in terms of her teaching practice, suggesting that she had become more competent in the use of the tools.

I have learned a lot I was able to apply what I learned in the classroom and my pupils are very excited and they want to learn more. (Roberta, final interview)

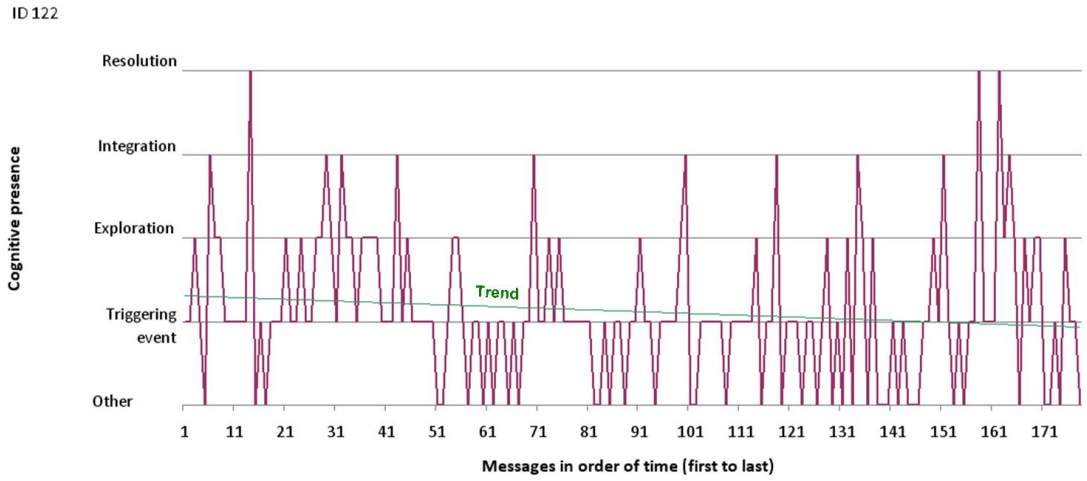


Figure 7-8 Second LE: coding of cognitive presence over time for participant Roberta

The coding of Roberta's messages results in a trend over time which is inconclusive regarding her competence development, as illustrated by Figure 7-8. Indeed, it was difficult to determine the level of cognition of her messages as she often made assertions without explaining her reasoning; messages coded as exploration (cognition) could have been interpreted as integration (critical-thinking) had she justified her reasoning. Roberta shares the same cultural background as Lenuta (also from Romania) who had indicated that reflection and discourse were new to her and not part of her previous educational experience (see section 7.2.1). This may explain Roberta's rather superficial level of discourse.

Roberta exhibited a high level of teaching presence with 20% of her messages demonstrating facilitation and 21% direct instruction – the latter being much higher than the other participants analysed. This is perhaps again a reflection of her previous experience and of her ability to provide her peers with a solution to their problems. In her final interview, she explained how she helped another team to join theirs and thereby increased the collaboration.

When I saw they were a little lost [Azure team] I invited them to join our forum, team. (Roberta, final interview)

In reality, her messages to her colleagues were at times quite direct and frank, as the following example shows – this was a message to one of the participants joining her group from the other round table (Azure team).

> We had been a team since yesterday. Check your mail. You have an invitation to edidt our brainstorming about Web 2.0. We are waiting for you. ☺ (Roberta, message 97)

Overall the results for her social presence show proportionally fewer open communication messages (25%) compared with messages demonstrating group cohesion (57%).

In the final interview, Roberta demonstrated metacognition in reflecting on how the participants had behaved during the LE. She noted how teachers themselves had behaved like children, uncoordinated, going in every direction, expecting help. However, she further noted that over time, after trying things out in practice and then talking about it in the final reflection, the participants seemed to come together and have a better idea of what to do.

> When we started we were like children. You know how children are? And when we finished, what was great was that we had three weeks time just for, just for, it was for me like a journey. And we had to think, what we did, what we had applied, what I learned, what I can do in the future; and then came the end, altogether we were like a tree .. every partner seemed to express what I think in just one slide. (Roberta, final interview)

Roberta's comments concur with the results of the interviews which showed that at the start of the LE, the participants expected the teaching presence of the tutors to be high, organising the learning and giving instructions on what to do. However, over time the groups became self-organising as they offered each other support and thereby provided the necessary teaching presence; this result concurs with some of the literature discussed in section 2.2 (e.g. Salmon, 2000; Arbaugh, 2007).

In conclusion, Roberta was already quite experienced in the use of web 2.0 tools before she started the LE and her main objective was to share her experience, support others and develop her facilitation skills. The results suggest that she was very focused on achieving the cognitive activities (cognitive presence) and on encouraging collaboration (teaching presence). In this respect her communication style was quite direct and instructive, lacking the explanations needed for her peers to understand her reasoning. This was reflected in her social presence which lacked open

communication and empathy. Overall the coding of the messages in the discussion forums does not shed light on the development of Roberta's competence. For this, the analysis must rely on her own perceptions and the descriptions of her experience, as expressed in her interview.

7.3 Summary of results from the coding of the online discourse

The coding of the messages across all forums of the LE for seven participants, using the coding schemes associated with the CoI model, reveals further insights into their cognitive, social and teaching presences. There is evidence of cognitive development over time and metacognition for some participants, notably the less experienced ones, corroborating their assertions in the interviews that they felt more confident and competent as a result of having participated in the LE. Where the cognitive development is inconclusive, evidence often exists in other data to suggest that metacognition and competence development did nevertheless take place, reminding us that content analysis only surfaces part of the learning within an online community. Moreover, there is evidence to suggest that lurking in the discussion forums, or legitimate peripheral participation (Lave and Wenger, 1991), is beneficial for participants who still learn from reading and reflecting on the experiences of others.

The analysis suggests that a strong social presence with open communication and teaching presence with facilitation engenders collaboration, and that this in turn is beneficial for learning (as illustrated by the results for Annalisa, in section 7.2.3). A strong social presence appears to contribute to the online reflection being both intellectual and emotional (as illustrated by the results for Edita, in section 7.2.5). The results also suggest that a lack of previous experience of critical and reflective learning, a social presence that lacks openness and empathy for others, or a teaching presence that is too directive, may hinder effective collaboration and group cohesion (as illustrated by the results for Lenuta and Roberta, in sections 7.2.1 and 7.2.7).

Analysis of the frequency of participants' messages posted in the staff room over time suggests that participants were significantly influenced by the timing of the cognitive activities and by the intervention of the tutors (as illustrated by Figure 7-1 and discussed in section 7.1). Initially, the interventions of the participants followed closely those of the tutors. However, this was less so towards the end of the LE and notably during the final reflection activity, when the participants exhibited greater self-organisation and autonomy. Despite the forums in the staff room being left open and the tutors remaining present, the analysis shows that interaction tailed off considerably when it was not necessary for the cognitive activities, suggesting that

communication was purposeful. Consequently, the online community was ephemeral, lasting only for as long as it served the purpose of learning.

These findings are further discussed in the next chapter, together with the complementary findings from the questionnaires and interviews. Section 8.2.3 offers reflections on the coding of the online discourse and the use of the CoI framework.

Chapter 8 Discussion on the Second Cycle and Research Conclusions

This chapter discusses the findings from the second cycle of research, as presented in Chapter 6 and Chapter 7, and uses the analysis as a basis for answering the research questions originally presented in section 1.5. It concludes by reflecting on the research, by discussing the implications for practice and by offering suggestions for further research.

8.1 Discussion of findings from second cycle

The following sections look at the results of the second cycle of research from the point of view of the cognitive, teaching and social presences of the Community of Inquiry (CoI) framework. The findings are then considered in the wider context of the Learning Event (LE) to draw conclusions concerning the impact of the event and the community on the development of the participants' competence and teaching practice.

8.1.1 Cognition, critical thinking and metacognition – cognitive presence

The coding of the forum messages of seven participants provides insights into their cognitive development, complementing the data obtained via the questionnaire and interviews (discussed in section 7.2). For five participants, for example Sorina, the coding shows a gradual transition from the lower levels of cognition to the upper levels associated with critical thinking. Critical thinking and metacognition are associated with constructing meaning and are a central tenet of adult education (Garrison, 1991). They are instrumental in influencing teachers' attitudes, preparing them for ill-defined problems of the future and leading to changes in teaching practice (Boyle et al., 2004). As such they are an essential feature of CPD aimed at competence development, as opposed to simply improving technical skills. This empirical evidence from the message coding supports the participants' assertions in the interviews that, as a result of the LE, they felt more competent in using the tools in their teaching practice and in online collaboration.

For two participants, Annalisa and Roberta, the trend in cognition over time is less conclusive, yet the interviews and a closer inspection of their contributions to the final reflection activity reveal stories of their trying things out, reflecting on the benefits for their pupils and pondering the wider consequences for their own practice. From this we may confirm that whereas the *presence* of critical thinking in online discourse may

imply that competence development *did* occur, its *absence* does not imply that competence development *did not* occur. Critical thinking may be evident in other artefacts, such as the blogs, the email discussions, etc. and this highlights the limitations of analysis based solely on the online discourse (Enriquez, 2009).

Critical thinking occurred in the second LE as the participants integrated what they had learnt into their practice and resolved the issues that had initially triggered their inquiry (Garrison et al., 2001); 'evaluating ideas for their quality, especially judging whether or not they make sense' (Martinez, 2006, p.697). The results also suggest that metacognition occurred as participants considered the impact of their learning beyond this specific experience in order to understand the longer-term implications for their practice and their continuing competence development (Akyol and Garrison, 2011); obtaining 'an understanding of one's own knowledge state' (Martinez, 2006, p.697).

Approximately 40% of the participants did not have the opportunity to try things out in their teaching practice, yet the experience of Lantha (see section 7.2) highlights the potential for vicarious learning, as less experienced (and possibly less confident) participants benefit from the stories, experience and discourse of others. This concurs with the view of Lave and Wenger (1991) that lurking, or legitimate peripheral participation, is also beneficial for learning in an online community.

The development of cognition took time and the results support the view of Eraut (1995) that reflection can be more deliberative and productive if teachers have time to explore options, consult peers and carry out metacognitive thinking. The results concur with research conducted by Akyol et al. (2009) which suggests that a longer course duration can be beneficial for the development of critical thinking.

Cognitive development was most evident in the online discourse for those participants who had little or no previous experience. More experienced participants nevertheless benefited in other ways, for example in having the opportunity to use their teaching presence to support the work of others, which in turn facilitated collaboration. However, as discussed in the next section, the online tutoring and support of peers in the LE was not the subject of critical reflection and there is no evidence in the online discourse to suggest that the LE supported the development of this specific competence.

Whereas there is evidence of critical thinking in the messages analysed, the majority of messages in the forums were at the lower cognitive levels of triggering and exploring ideas. This result is similar to that found in other research (Kanuka et al.,

2007; Shea et al., 2010). Most messages that were at the higher cognitive levels took place during the final reflection activity, when the discourse was initially structured by the tutors to encourage critical thinking. This highlights the value of teaching presence, which is further discussed in the next section.

8.1.2 Cognitive activities, reflection and guidance – teaching presence

The coding of the forum messages suggests that the discourse in the forums was influenced considerably by the teaching presence (as illustrated in Figure 7-1). Initially this was provided by the tutors who organised appropriate cognitive activities to encourage collaboration (such as the final reflection activity) and facilitated the discussion by intervening to offer feedback and prompt reflection. However, over time teaching presence emerged from the participants themselves as they facilitated the discussion within their groups and offered each other support. Consequently, the tutors were able to step back and let the groups become self-organising. The success of this approach is confirmed by the interviews which show that the participants initially perceived it to be the role of the tutors to offer guidance, to instruct and to solve problems, whereas after the LE, their perceptions had changed to suggest that support and guidance could be provided by both tutors and participants. What emerged from the interviews was the feeling that the tutors were present, could be called upon if needed and would intervene if necessary. Tutor presence in turn strengthened the sense of community, as discussed in the next section – a result found in other similar research (Shea, 2006; Shea et al., 2006).

Using different moderation styles at different times is consistent with the approach advocated by Salmon (2000) and was shown to be effective in similar research conducted by Hlapanis and Dimitracopoulou (2007) in a school teachers' learning community. This approach addresses the 'riddle of the liberating structure' (Pedler, 1981, p.77), in which learners are encouraged to be self-organising but do not necessarily possess the attitude or know-how to achieve it, and the tutors use their teaching presence to gradually lead participants towards autonomy (Boud, 1988). However, it is contrary to the experience of Vlachopoulos and Cowan (2010) in their research on e-moderation in an online undergraduate course where they found that tutors maintained a leading role and self-organisation (teaching presence) did not emerge from the participants. This latter example serves to remind us that an approach which is appropriate for professionals in a learning community of peers may not necessarily be so in more formal educational settings where significant differences exist in authority and power (Hodgson and Reynolds, 2005) and expectations exist concerning the role of tutors and students. Moreover, in these more formal settings the

tutor usually remains responsible for assessing the performance of the students and this does not create a micro-context which is conducive to intellectual and emotional reflection (Boud and Walker, 1998), as discussed in the next section in relation to the community.

Concerning teaching presence, the analysis shows that only 38% of the messages coded showed teaching presence (compared with 77% showing cognitive presence and 95% social presence). One explanation for this is that the participants were more dependent on the tutors for the teaching presence in the early days of the LE and that mutual support took time to emerge, as the participants became more autonomous and the community developed. Only 2% of the messages analysed reflected design and organisation (one of the three indicators of teaching presence, see section 2.2 and Table 2-1). Anderson et al. (2001) suggest that this is to be expected as organisation primarily occurs before the online learning starts, requires considerable preparation and is usually the remit of the tutor. Whereas our experience as tutors concurs with this view, I would argue that it is not only before the learning starts that preparation occurs – our preparation of activities continued throughout the LE and was influenced by the results of the ongoing activities. As such, Tiina and I were carrying out reflective teaching (Jay and Johnson, 2002).

Facilitation, on the other hand, was present in 23% of the participant messages and emerged over time as participants got to know one other, developed trust and became more confident. The aspect of trust is further discussed in the next section. Direct instruction was present in only 12% of the messages and was mainly offered by the more experienced participants helping those less experienced to overcome problems. Salmon (2000, p.35) has noted that online communities typically progress through five stages, arriving at the final stage of development where typically 'experienced participants often become most helpful as guides to newcomers'. Indeed, the results showed that the teaching presence was higher in those participants with more experience and was most successful, in terms of facilitating collaboration, with those who exhibited a strong social presence (see next section).

The question arises as to whether the teaching presence observed in the research was affected by it being a community of school teachers, as opposed to another type of professional community such as one involving doctors, for example. It is perhaps reasonable to expect that experienced teachers will be more sensitive to the needs of guidance, feedback and support in learning. Indeed, this may have been one of the factors influencing their expectations for teaching support during the LE, as discussed in the analysis of the interviews prior to the LE starting in section 6.3.1. Yet there was

no evidence in the data analysed to suggest that the school teachers behaved in any way differently from other professionals in a similar situation. Indeed, Roberta suggested during her interview that the participants had not behaved as she thought teachers would during the early days of the LE 'When we started we were like children. You know how children are?' (see section 7.2.7). Therefore, the research suggests that the effectiveness of the participants' teaching presence was mainly influenced by their confidence, experience and competence in online moderation – as discussed further below – rather than the fact that they were school teachers.

An appropriate balance between organisation by the tutor and self-organisation by the participants is not easy to achieve in online moderation. For example, results from the first LE showed that the participants were frustrated by the need to divide themselves into small groups (see section 5.1.1). We decided that they were perhaps too inexperienced to be dealing with this at the beginning, before relationships had been established. Therefore in the second LE, we pre-allocated them to the round tables that we created in the staff room. The results show that this organisation was appreciated and that it helped to focus the participants on the more important tasks of establishing their presence, collaborating and learning. In other words, providing structure in online collaboration helped the participants to focus on the content (Lockhorst et al., 2010). On the other hand, we did not provide a structure for what to do when collaboration was not successful in the groups and a few participants were unhappy with this. They expected the tutors to intervene when things did not work and whereas we do not necessarily agree that this was our role (we saw it as a useful learning exercise), we realise that we did not provide them with the flexibility to change tables or take other corrective action. In other words, the reflective practice did not enable the learners to act upon their reflections (Boud and Walker, 1998). In hindsight this aspect of the LE could have been better organised. The experience shows that when collaboration is successful, it can provide a powerful support to learning. On the other hand, when it fails, it can be an equally strong source of resentment and disappointment.

The results show that the final reflection activity was instrumental in encouraging critical thinking (see previous section). The activity was structured so as to encourage participants to reflect and discuss their own experience, and then to reflect and comment on the experience of others. The questions used to provoke the discourse had a positive impact, framing the discussion within the learning context (Boud and Walker, 1998) and giving it a critical stance (Garrison et al., 2001). If we compare the discussions in the final reflection with those taking place elsewhere within the staff room, even at the same round tables, we notice that the level of cognition was

generally much lower outside of this structured activity. This result supports the findings in other research that without suitable structure and guidance, participants tend to engage primarily in serial monologues (Angeli et al., 2003; Pawan et al., 2003).

Boud and Walker (1998, p.203) suggest that reflection before an event is equally important as reflection during it or after it: 'Understanding beforehand the factors that may be operating within the future learning event is necessary in order to work creatively within that event'. In retrospect this would have been a good idea and may have helped the school teachers to think about developing their competence in online moderation, as well as in using web 2.0 tools with their pupils and in collaborating online.

Whereas Korthagen (1993, cited in Griffiths, 2000) posits that there is a lack of empirical evidence that reflection is effective and Akbari (2007) argues that there is no evidence that engaging teachers in reflection leads to better pupil learning, the results obtained from the second LE suggest otherwise. In the final reflection activity, the school teachers recounted to their peers concrete examples of how they had tried out the web 2.0 tools in their teaching practice, had learnt from the experience and had seen positive outcomes. Moreover, whereas Akbari argues that 'Reflective practice, if it excludes theoretical discussions, will limit teacher development to matters of techniques and procedures' (2007, p.204), our experience suggests that the discourse moved beyond organisational aspects, to consider issues of creativity, imagination and motivation, without the inclusion of theoretical aspects. Such a result may be due to the fact that the participants were all experienced school teachers.

Balancing structure with flexibility in a cognitive activity is a difficult design decision for the tutor. The former may encourage the discussion to remain focused on learning and be critical in nature, whereas the latter may encourage imagination and creativity. The former encourages reflection in a structured dialogue; the latter engenders reflection in the context of intuition and autonomy, a key feature of teaching (Akbari, 2007). Whereas the cognitive activities of the first 11 days led to little critical thinking in the discussion forums, they did provoke considerable creativity, imagination and learning by the participants, according to the results of the questionnaire and interviews. The possibility also arises that critical thinking did take place, however it was not evident in the nature of the discourse at this point of the LE but may have manifest itself in other artefacts (as discussed in the previous section). Akbari (2007) suggests that teachers need to be taught to reflect critically. Perhaps it would be more accurate to say that teachers need to be encouraged to make their contributions to

online discussions more critical, surfacing the evidence of their reflections (as we saw in the final reflection activity). Garrison (2007) argues that facilitation shapes discussion, whereas disciplined inquiry requires a knowledgeable teacher to foster discourse. Whereas our research showed the value of teaching presence for engendering critical discourse in the final reflection activity, I would argue that it was not because we are knowledgeable teachers but rather because we are experienced online moderators who organised, supported and encouraged learning – as suggested by Thomas et al. (2004). The research suggests that cognitive presence needs a strong and effective teaching presence, and that this can be provided by tutors or participants who are competent in online moderation.

The context for the reflection and the social setting in which it took place were crucial, as discussed in the next section.

8.1.3 Social issues, relationships and community – social presence

The interviews highlighted the importance that participants attached to social interaction and this was confirmed by the message coding which showed that 95% of the messages reflected social presence (for the seven participants analysed). As with the first LE, relationships developed well between individuals, supported by the social affordances of the LE environment (Kreijns et al., 2002; Conole and Dyke, 2004), such as the discussion forums and the participant profile pages. However, group cohesion was perceived as stronger in the second LE and this was reflected in a change in the participants' preference from posting messages to individuals, to posting messages to their group. In this respect, the staff room was seen to be a contributing factor with 48% of all messages being posted there. It provided a stable place for participants to meet their group, discuss informally and reflect on their learning, as the following comment highlights:

> I think that the staff room was a good idea, intended as a really useful tool for the different groups, as a meeting point for members, where they could discuss topics, share proposals and take decisions in team. (Annalisa, female teacher from Italy)

The interaction at the round tables at the start of the LE (during the Welcome activity) helped to establish a social presence for the participants and the necessary 'grounding' for group work (Stahl, 2005). Throughout the LE, the staff room offered both practical and emotional support, which was particularly useful for those who were less experienced or simply needed to be reassured. The results show that this in turn facilitated collaboration and ultimately reinforced the cognitive presence, as discussed

above. This is in line with other research which highlights the positive influence of social presence on cognitive presence (Shea and Bidjerano, 2009) and on learner satisfaction (Gunawardena and Zittle, 1997; Richardson and Swan, 2003). However, it is at odds with the research of Akyol and Garrison (2008) which suggests that whereas social presence increases learner satisfaction, it has no direct impact on learning. The research also suggests that social activity in the staff room was initiated by the cognitive activities, as organised by the tutors, and was encouraged by the feedback from the tutors and peers. In other words, the teaching presence was instrumental in fostering effective social and cognitive presence (Rourke et al., 2001a; Swan and Shih, 2005).

Whereas social interaction was seen as being as equally important as it had been in the first LE (see section 6.2.6), this time the social activities were perceived as an important part of learning and a complement to the cognitive activities. This result concurs with other research that highlights the importance of social interaction as an integral aspect of learning (Kreijns et al., 2002; Volet and Wosnitza, 2004; Kreijns et al., 2007; Zenios and Holmes, 2010; Abedin et al., 2011).

On the other hand, when collaboration was not successful, participants perceived the staff room and the need to interact with other group members at the round table as an additional burden that yielded little value. The results of the message coding highlighted that when collaboration was less successful, it was often associated with a lack of teaching presence from the participants, with little attention paid to facilitation. The results also showed that collaboration may be less successful when participants have a social presence that is more individualistic in nature – their messages being rather formal and directive, cf. Roberta, rather than open and encouraging group cohesion. In this respect, the presence of emotion in the messages was seen as helping to reduce barriers to collaboration, engendering a feeling of trust and increasing the perception that members of the group were 'real' (Gunawardena, 1995). Emotion is an important attribute for social presence and a factor seen as significant in other research on online teacher communities (Duncan-Howell, 2010).

Although interaction contained a strong social element, it remained purposeful and primarily focused on learning. This was illustrated by the fact that social interaction quickly tailed off during the period for practice and when the final activity was complete - the only motivation for participants to continue interacting was to stay in touch socially, something that a few tried to do but quickly gave up when they saw that no one replied. The comments of one participant, Rosina, illustrate the disappointment that may ensue when participants continue to post messages in a

community that is dying off and receive no reply (see section 6.3.2). A possible conclusion from this is that it may be better for the tutor to close down the community at the end of the LE.

The results show that collaboration and discourse is more likely to take place within a community when there are shared activities to be performed and common deadlines or targets to achieve (Lockhorst et al., 2010). This concurs with the view of Garrison and Arbaugh (2007, p.63) that social interaction must be focused on learning: 'social presence must move beyond simply establishing socio-emotional presence and personal relationships. Cohesion requires intellectual focus (i.e., open and purposeful communication) and respect'. The community was purposeful, focused on learning, ephemeral in nature and akin to what Riel and Polin (2004) describe as a *task based community*.

The perception of the participants was that the community developed over time and that it helped them with their learning. This concurs with other research that suggests that communities take time to develop through social negotiation (Vratulis and Dobson, 2008). The participants perceived that the community offered them a place to discuss openly and frankly with peers, giving them a feeling of belonging and increasing their confidence. It was characterised by trust, shared values and beliefs (McConnell, 2006), and a focus on improving teaching practice – corresponding to the definition of an online community posited by Barab et al. (2003); see section 1.2. It was a 'critical community' (Selinger, 1998) supporting practitioner reflection in a shared rather than insular manner, in a micro-context conducive to intellectual and emotional reflection, and free from barriers to collaboration that might exist in the wider context (Boud and Walker, 1998); barriers such as differences in power relations between teaching staff and management, and between participants and the educator who assesses their performance.

8.1.4 Competence development and teaching practice

Whereas the first LE revealed little evidence of competence development in teaching with Web 2.0 tools (see section 5.1.1), the results from the questionnaire of the second LE show that most participants' perceived that their competence had developed. They reported that they felt more competent and confident in using web 2.0 tools in their teaching practice and in managing online collaboration with their pupils (see section 6.2.2). This perception is supported by the analysis of the forum messages, as discussed above, which suggests that cognitive development did take place. The results also indicate that the participants interpret such competence in terms of having

the appropriate pedagogical knowledge, skills and aptitude/attitude to use the tools effectively to support pupil learning. Their interpretation of competence is very much in line with the definition used in EU policymaking (EU, 2004) and with that used in this research. Moreover, in linking their own competence development to improved pupil learning, they are reflecting the view of Guskey (2002) that teachers' practice is heavily influenced by how they perceive it will influence the learning outcomes of their pupils.

The interviews showed that participants' perceptions had changed during the course of the second LE from mainly expecting to learn about the tools and how they *might* be used in teaching, to actually seeing how they *can* be used; either directly through practical experience or indirectly by reading and discussing the experiences of their peers. Their perceptions before the LE started may have been conditioned by their previous experience of teacher training, the majority of which focuses on acquiring formal knowledge, mainly from experts and mostly out of context (Boyle et al., 2004). Whereas the results suggest that their actual experience reflected more situated learning (Lave and Wenger, 1991), producing knowledge-in-action (Schön, 1987) in the context of their everyday teaching practice. Most importantly, they perceived this as being beneficial for their learning – the interviews show that the LE provided opportunity to try out ideas with pupils and gave them experience to which they could later refer in their discourse with their peers in the final reflection. However, such opportunity came at a price and the feedback from the questionnaire and interviews reinforced the considerable investment that the school teachers needed to make, balancing their busy teaching with the extra demands of the LE. Yet, despite the extra length of the LE, in order to accommodate the additional practice and reflection activities (34 days compared with the 11 days of the first LE), a similar number of participants completed all activities and obtained a certificate as had with the shorter first LE (108 participants or 76%, compared with 110 or 71% for the first LE). These results demonstrate the value of engaging school teachers in continuous professional development (CPD) that provides direct and immediate benefit for their teaching practice, and they concur with other research which shows that teachers are often willing to invest considerable time in such online CPD and in professional communities if they perceive immediate benefit (Bolam et al., 2005; Duncan-Howell, 2010).

The results suggest that by seeing the impact of what they were doing on their pupils' learning, the school teachers increased their self confidence, were motivated to keep learning and gained belief in the value of applying the tools. During the interviews and in the messages posted in the final reflection, the participants spoke with passion

about their positive experience. They talked about increased creativity and engagement, and of their ability to better connect with their pupils and understand their learning needs. These results accord with Guskey's (2002) *alternative model* of teachers' CPD, which assumes that teachers need to witness evidence of benefits before their attitudes will change and with Hargreaves' (1998) view that teaching is an emotional practice.

The results of the questionnaires and interviews indicate that participants' competence and confidence in online collaboration developed in a similar manner in both LEs. However, for the second LE there was a noticeable change in their reflections on the *value* of collaboration, with collaboration generally perceived as having been more successful. When it was not successful, the participants were more sanguine and were often able to articulate why, providing suggestions for how it might be improved in the future. By seeing the wider consequences of their development beyond the individual learning experience, the school teachers are better able to deal with new situations, their attitude and aptitude are influenced positively (Vescio et al., 2008), and they become more competent as opposed to simply becoming more skilled. The participants had reflected-on-action (Schön, 1987), had demonstrated deliberation and metacognition (Eraut, 1995) and were able to make connections from a specific experience to the wider social practice implications (Lave and Wenger, 1991).

As discussed in the literature review, section 2.3.3, competence is associated with skills, knowledge, aptitudes and attitudes (EU, 2002). Competence development is associated with critical thinking, metacognition and what Cochran-Smith and Lytle (1999) refer to as knowledge-of-practice. The research suggests that the changes implemented in the second LE had a positive impact on the development of the school teachers' competence and on the application of what they were learning in their teaching practice. The perception of some participants that their competence had developed concurred with the coding of their online messages which suggested cognitive development and critical thinking. The positive change in attitude of some participants was illustrated in their interviews. The development of some participants' understanding of the consequences of their learning for their teaching practice was illustrated by the discussions in the final reflection activity. As with the first LE, the cognitive activities supported the school teachers to develop knowledge-*for*-practice (Cochran-Smith and Lytle, 1999), giving them the technical skills they need to effectively use the tools. However, in the second LE, the addition of a period for teachers to apply what they were learning in their classrooms complemented this with the development of applied knowledge-*in*-practice, associated with the 'artistry of practice' (1999, p.262) and the ability to deal with less familiar situations. Finally, the

addition of a reflection activity at the end of the second LE encouraged the school teachers to develop meta knowledge-*of*-practice, by connecting their own experience and development to the larger social, cultural and political issues associated with teaching. This process involves a spiral of knowledge development in which understanding evolves in a dynamic critical discourse, as peers comment, challenge and build upon each others' reflections.

The next section uses the findings of the second cycle to offer answers to the research questions and conclusions on the research.

8.2 Conclusions

8.2.1 Addressing the research questions

The results from the second cycle of research on the revised LE highlight important changes compared with the first; changes that help us to understand how school teachers' competence may develop with the support of an online community and the impact of cognitive, teaching and social presence. This section returns to the research questions, as initially presented in section 1.5, and offers answers using the experience gained from the two cycles of action research.

In an eTwinning Learning Event (LE) for school teachers' continuous professional development:

- *how does the online learning community influence the development of teachers' cognition, practice and competence?*

The research suggests that the online learning community supports the development of school teachers' competence by providing opportunities for continuous professional development (CPD) that are in the context of everyday teaching practice and that support critical inquiry, experimentation and reflection-in-practice with peers. The LE activities encourage an epistemology of practice (Eraut, 1994) with teachers not only expressing their understanding of what they are learning, but developing that understanding over time. Teachers participate in what Zwozdiak-Myers (2008, cited in Capel et al., 2009) describes as a cycle of personal action research and professional improvement involving practice, reflection and critical discourse with peers.

The research shows that the online community is characterised by a sense of trust, reciprocity, shared values and beliefs (Barab et al., 2003; McConnell, 2006), and has a

clear focus on improving teaching practice and pupil outcomes (Vescio et al., 2008). As such, the community provides a micro-context that is appropriate and conducive for school teachers' intellectual and emotional reflection (Boud and Walker, 1998). The community helps to overcome geographical and institutional barriers to collaboration, connecting teachers from different schools, regions and countries, in a network *of* teachers *for* teachers (Leask and Younie, 2001b; Day and Sachs, 2004; Stoll et al., 2007; Hramiak, 2010). It is a 'critical community' (Selinger, 1998) that offers both individual and collective understanding as to how teaching practice can improve (Stahl, 2005; McConnell, 2006). It is primarily focused on achieving the learning activities (Lockhorst et al., 2010) and is consequently ephemeral in nature, existing only for as long as it serves the purpose of learning (Riel and Polin, 2004; Garrison and Arbaugh, 2007).

The research shows that the cognitive activities of the LE provide an opportunity for school teachers to develop their technical skills and knowledge-*for*-practice (Cochran-Smith and Lytle, 1999). However, it also suggests that it is important for school teachers to have the opportunity to try out what they are learning in their own teaching practice in order to see the impact on their pupils' learning and develop knowledge-*in*-practice. The combination of cognitive activities in the LE and trying out ideas in practice encourages the trying out of ideas in the classroom and a reflection-in-practice (Eraut, 1995) in the online discourse with peers. Moreover, the research suggests that school teachers who are unable to try-out ideas directly for themselves may still learn vicariously (Lave and Wenger, 1991; Ertmer, 2005) by collaborating and reflecting with others in the community – as we saw in the final reflection activity of the second LE. By allowing school teachers to see the impact of what they are learning on their teaching practice and reflect on the implications with other school teachers, the research suggests that they gained belief in the value of the changes being applied and are motivated to continue learning (Guskey, 2002; Boyle et al., 2004; Vescio et al., 2008).

The research highlights the importance of strengthening cognitive presence within the online community, through cognitive activities and collaboration that encourages practitioner inquiry and critical thinking (Garrison et al., 2001; Groundwater-Smith and Dadds, 2004; Garrison and Cleveland-Innes, 2005; Akyol and Garrison, 2011). It offers empirical evidence as to the value for school teachers of reflecting on their practice (Akbari, 2007) with peers, fostering metacognition and connections to the wider social, cultural and political issues associated with teaching, thereby developing the meta knowledge-*of*-practice (Cochran-Smith and Lytle, 1999) that is essential for long-term teacher change and competence development.

The research suggests that cognitive development, reflection of 'a more deliberative character' (Eraut, 1995, p.14) and the creation of an online community take time (Vratulis and Dobson, 2008) – the second LE was extended from 11 days to 34 days to accommodate the additional practice and reflection activities. This requires considerable commitment from busy school teachers, which must not be underestimated. Yet the research also suggests that some school teachers are prepared to invest additional time in such CPD and in a professional community if it provides them with immediate benefit for their teaching (Bolam et al., 2005; Duncan-Howell, 2010).

The research suggests that the LE is most beneficial for those participants who have little or no experience in the subject being learnt (in this case Web 2.0 tools). In undertaking the activities, they benefit from collaborating with peers who are more experienced and who share their knowledge. In return, the experienced participants practice supporting and guiding their peers. However, whereas activities were in place in the second LE to support reflection on the subject of the LE, they were missing regarding reflection on online moderation. The opportunity to support competence development in online moderation could be included in any future LE, whatever the main subject.

- *how do teaching presence and social presence influence the collaboration, the cognitive presence and the development of the community?*

The research shows that online collaboration and discourse, cognitive development and sense of community are significantly influenced by the teaching presence (Garrison et al., 2000; Swan and Shih, 2005; Shea et al., 2006; Shea and Bidjerano, 2009). This may be initially provided by the tutor in the design of the activities and in online moderation, framing discussion within the learning context, encouraging critical thinking and offering feedback (Boud and Walker, 1998; Anderson et al., 2001; Garrison et al., 2001; McConnell, 2006; Kanuka et al., 2007); as demonstrated by the final reflection activity in the second LE. However, the results show that it is possible for the tutor to step back as the community develops and teaching presence emerges from the participants themselves, offering mutual support and guidance (Salmon, 2000; Hlapanis and Dimitracopoulou, 2007).

The tutor needs to find an appropriate balance between structure and guidance on the one hand, and flexibility and autonomy on the other (Vlachopoulos and Cowan, 2010). The former orchestrates learning around critical thinking and helps participants

to focus on the cognitive activities (Dillenbourg, 2008; Lockhorst et al., 2010). The latter encourages creativity, intuition, passion and emotion (Jay and Johnson, 2002); typical aspects of everyday teaching practice (Hargreaves, 1998; Akbari, 2007). Moving from the former to the latter gradually, as teaching presence emerges from the group, encourages participants to build their confidence, develop their autonomy and become self-organising (Pedler, 1981; Boud, 1988). The research suggests that finding an appropriate level of teaching presence requires competence in online moderation, and an ability to organise, understand and encourage learning, rather than a deep knowledge of the subject matter (Thomas et al., 2004). Moreover, without appropriate teaching presence, the results confirm that participants tend to engage primarily in serial monologues and stay at the lower levels of cognitive presence (Angeli et al., 2003; Pawan et al., 2003).

The research suggests that social presence is essential for effective collaboration, for engendering the trust and confidence needed for online reflection, and for fostering the development of the community. Social presence is engendered in the LE by the social affordances of the environment (Conole and Dyke, 2004; Kreijns et al., 2002), such as the online discussion forums and participant profile pages. However, as the results of the second LE suggest, just as important is the inclusion of time, space and activities specifically dedicated to social interaction and building social presence (Kreijns et al., 2003; Swan and Shih, 2005). The addition of a virtual staff room with small groups at round tables and activities to support informal reflection, helped to increase group cohesion (Seddon and Postlethwaite, 2007), to provide the necessary 'grounding' for group work (Stahl, 2005) and to foster a sense of community (McMillan and Chavis, 1986).

The research suggests that social presence facilitates collaboration, reinforces cognitive presence (Shea and Bidjerano, 2009) and contributes to learner satisfaction (Gunawardena and Zittle, 1997). Social presence is itself engendered by the teaching presence of tutors and participants (Rourke et al., 2001a), which in turn reinforces the cognitive presence of the participants through the design of appropriate activities, the application of flexible moderation and the emergence of mutual support. In other words, cognitive presence, teaching presence and social presence are inter-related and inter-dependent in an online learning community (Garrison et al., 2010b), and a careful balance of all three is required to ensure a purposeful and effective educational experience for its participants.

A model emerges from the research for the implementation of school teachers' continuous professional development (CPD) online in an eTwinning LE and for the

moderation of the online community. This is summarised and further discussed in section 8.2.4 in terms of the implications for practice.

8.2.2 Contribution of the research

This research contributes to the existing body of research literature, discussed in Chapter 2, by providing further empirical evidence of the value of online learning communities for school teachers' CPD (Leask and Younie, 2001a; Stoll and Louis, 2007; Vescio et al., 2008; Duncan-Howell, 2010) supporting an *epistemology of practice* (Schön, 1987; Day and Sachs, 2004). The analysis concurs with research that suggests it is valuable for teachers to apply what they are learning in their everyday teaching practice as this connects with their fundamental values and beliefs as teachers, and engenders long-term change (Guskey, 2002; Ertmer, 2005; Ottenbreit-Leftwich et al., 2010). It supports research on competence development (Eraut, 1994; 1998) and the role of teachers' reflective practice (Eraut, 1995; Jay and Johnson, 2002; Griffiths, 2000) by illustrating how school teachers may effectively undergo intellectual and emotional reflection in practice in an online community of peers (Boud and Walker, 1998). It thereby fills a gap in the existing research by providing empirical evidence of the value of such teacher reflection (Akbari, 2007) and of school teachers connecting formal and practical knowledge with the wider social and organisational context of teaching (Cochran-Smith and Lytle, 1999).

This research takes forward the current work on online learning communities by revisiting the characteristics of an online community for educational purposes (Grossman et al., 2000; McConnell, 2006). It does so by applying the widely validated CoI framework (Garrison et al., 2010a), extending its use beyond higher education and applying it to the context of a CoI for school teachers' CPD. It responds to calls from the literature (Arbaugh, 2007; Garrison and Arbaugh, 2007) to look at all three presences from a holistic perspective using both qualitative and quantitative methods. It offers further feedback of the use of the coding schemes for cognitive, social and teaching presence (Anderson et al., 2001; Rourke et al., 2001a; Garrison et al., 2001) and offers suggestions for further research to improve their relevance.

This research offers further empirical evidence of the interdependency of the cognitive, social and teaching presences (Garrison et al., 2000). It provides examples of how change may be applied within an online learning community to reinforce critical thinking and cognitive development, ensure appropriate guidance and strengthen social ties. Contrary to some research (Vlachopoulos and Cowan, 2010), this research suggests that mutual support may emerge over time from the

participants. However, it also concurs with other research on the need for purposeful interaction (Swan and Shih, 2005; Garrison and Arbaugh, 2007; Lockhorst et al., 2010), on the essential role of the educator (or tutor) and on the value of orchestration in adult learning (Garrison, 1991; Dillenbourg, 2008). In this respect, it suggests that educators need to have good online moderation skills (Thomas et al., 2004) that adapt as the group develops (Salmon, 2000). It concurs with the literature which suggests that lurking in an online learning community can be beneficial for less confident or knowledgeable participants (Lave and Wenger, 1991). It suggests that an online community can offer an appropriate micro-context for reflection (Boud and Walker, 1998), by providing the shared values, trust and respect essential to teaching and school teachers.

This research illustrates the value of applying action research in education (Koshy, 2010) as an approach to researching '*with* teachers, rather than *on* teachers' (Groundwater-Smith and Dadds, 2004, p.242) promoting change through a democratic process. It builds upon other research conducted in the context of the European Schoolnet and eTwinning (Leask and Younie, 2001b; Vuorikari, 2009; Berlanga and Vuorikari, 2012; Cachia and Punie, 2012) offering more qualitative insights into online collaboration and the thriving international community of school teachers.

This action research contributes to ongoing research on online learning communities by offering a specific example of a more general concept (Koshy, 2010), as discussed in section 3.1.1. Whereas providing results that may be generalised beyond eTwinning is not the objective of such a case study, as discussed in the next section, it may be that this analysis will inspire useful reflections on learning in other forms of online professional learning communities. To this end, further research is proposed below to take this work forward in other, similar contexts.

8.2.3 Reflections on the research

Research approach

Action research is not without its critics, amongst them scholars who question the usefulness of collecting and analysing data that is subjective, that may have been influenced by the researcher and that yields results specific to a particular context (Cohen et al., 2007). Similar arguments apply to case studies which are 'prone to problems of observer bias, despite attempts made to address reflexivity' (2007, p.256). The question of subjectivity is addressed by arguing that the philosophical stance adopted in the research (and described in section 3.4.2) requires that we solicit the

views of the participants and that we analyse their interactions, as this is the only way of understanding a situation which is inherently subjective, personal and socially constructed. Similarly, that it is better to participate in this process, as a researcher and practitioner, in order to experience the situation from within and include one's own interpretations, rather than examine the situation externally as a seemingly impartial observer. Moreover, working with the participants engenders trust, ownership and responsibility, empowering them to influence the process. The question of generality is addressed in this research, at least in part, by the use of a validated theoretical model, the CoI framework, to analyse and interpret the results. Yin (2009, p.15) posits that case studies are 'generalizable to theoretical propositions and not to populations or universes' and Simons (1996) argues that they have gained legitimacy as a form of research, since they were first used in educational research during the 1960s and 1970s.

The democratic nature of action research allows changes to be discussed, applied and reflected upon in such a way that interest and ownership are engendered amongst the participant school teachers.

Reflexivity

Cohen et al. (2007, p.310) emphasise the central role of reflexivity in action research and how the 'values, attitudes, perceptions, opinions, actions, feelings, etc are feeding into the situation being studied'. The researcher must 'apply to themselves the same critical scrutiny that they are applying to others and to the research' (2007, p.310).

Reflexivity was achieved in the research in three ways:

- by discussing and reflecting on what I was doing in face-to-face meetings with the persons responsible at EUN;
- by exchanging emails and having synchronous discussions in Skype® with the tutor, Tiina;
- by reflecting on what I was experiencing and sharing my thoughts in my public blog.

The discussions with the colleagues from EUN helped to ensure that they have input to the process, as important stakeholders, and that the direction of the research was consistent with their thinking on the longer-term future of the LEs. The discussions with the tutor were used to share information, to reflect on the activity in the forums

and to decide on the nature of tutor/facilitator intervention. Collectively, these reflections guided both the practice and the direction of the research.

I started a public blog in April 2010 in order to present my research activities, share my thoughts and relate my experiences[12]. I decided that a public research diary would be more motivating for me. Moreover, the blog was a useful channel for me to provide feedback on the results of some of my analysis to the school teachers who kindly participated in my research. For example, in the blog post dated 3 September 2011[13], I gave an overview of the results from the second part of my questionnaire.

By being quite transparent and open about my research, I engendered a positive response from the school teachers to my work, as reflected in the messages of support that I received (by email and in response to my blog) and by the high response rate that I had to the online questionnaires after the two LEs (82% and 58%), with many respondents offering their name and email address for further correspondence. Reflexivity ensured that the research was responsive to the results emerging during the analysis, as illustrated by the additional questionnaire that was launched to ask questions about competence, once I realised during my analysis that this aspect was not sufficiently covered. There is still the possibility that the school teachers have different interpretations to my own on key aspects such as competence. However, through reflexivity and by taking actions such as the one described, I feel I have taken appropriate measures to reduce these to a minimum. Moreover, collecting data from several sources and cross referencing the results has reduced the chance of a misinterpretation in the final analysis.

Questionnaires

Questionnaires are typically used where facts and opinions need to be obtained from a large sample, in a standardised way (to facilitate comparison), concerning relative straightforward information (Denscombe, 2007) and to guide the course of subsequent inquiry (Koshy, 2010). The questionnaires used after both LEs were successful at obtaining a picture of participants' perceptions. This information was used to complement my observations after the first LE and to guide my further research after the second LE.

---

[12] http://holmesbrian.blogspot.com

[13] http://holmesbrian.blogspot.com/2011/09/being-competent-in-applying-web-20.html

The feedback from participants on the questionnaires was generally positive with lots of constructive suggestions, words of encouragement and requests to see the results. Some concern was raised over why I had asked people to indicate their names if they wished: 'Why, after underlining the idea that the questionnaire is anonymous, asking the name even if as an option?...' (Anonymous, female teacher from Italy). This is a valid point. Certainly, knowing the names of most respondents has allowed me to cross-reference the replies in the questionnaire with the interviews and with the messages during coding. On reflection I should not have called the questionnaire anonymous if I wished to also solicit names, even voluntarily.

The enthusiasm expressed in the questionnaires suggests that the school teachers welcomed the opportunity to be involved in the research and concurs with the view that action research engenders democratic participation (Day and Sachs, 2004; Groundwater-Smith and Dadds, 2004).

Interviews and transcriptions

Critiques of qualitative research point to the unreliability of interviews, with interviewees offering inaccurate or untruthful accounts of their experience and researchers biasing the results with their own opinions. They argue that it is better to obtain verifiable data via observations and examination of what is produced naturally (Roulston, 2010). Yet interviews allow participants to offer their own reflections and provide a unique opportunity for researchers to deepen their understanding of perceptions, attitudes and values (Silverman, 2006). Burgess (1980, cited in Silverman, 2006, p.124) describes the qualitative interview as a conversation which offers more depth than other methods due to 'a sustained relationship between the informant and the researcher'.

The interviewees clearly appreciated the fact that I was interviewing them and welcomed the opportunity to offer their opinion. The semi-structured nature of the interviews helped the interviewees to orientate their answers and allowed comparison of the results from the initial interviews and final interviews; this proved to be very valuable in illustrating how their thinking developed, as discussed in section 6.3. The standard questions used helped to reduce bias, as did the triangulation of the results with the questionnaire (when this was possible) and the messages in the discussion forum. The more open discussion that occurred with some interviewees yielded more depth for some answers, with explanations of the context of the teacher. For example, one participant, Rosina a female teacher from Italy, explained in some detail the situation within her school and the daily constraints that she faced in using ICT with

her pupils. This helped me to understand better her situation. However, it also gave me confidence in the structured questions that I had asked, as the interviewees tended to talk around the subjects I had raised, even when they were prompted to raise other issues and concerns which I had perhaps not mentioned.

In transcribing the data, I wrote the text verbatim, as best as I could from my understanding. Non verbal aspects of the conversation, such as tone and laughter, and fillers such as 'uhh' were not recorded in the transcription, as I felt it was not necessary for my level of analysis (Roulston, 2010). Interviews in French were transcribed and subsequently analysed in French, to avoid errors that might occur in translation; the text was only translated if used subsequently in the research as a citation. The interviews were transcribed either in their entirety or partially according to the relevance of the discussion; as Bassey (1999, p.81) suggests, an 'alternative is to paraphrase and make a shortened report of the tape'. If during the subsequent analysis, part of the paraphrased transcript proved to be useful, I went back and fully transcribed it. This practical approach balanced expediency with the need for rigour.

The transcribed interviews were analysed using CAQDAS, as discussed in section 3.3.1. When using such software, the researcher must pay particular attention to connect with the data (Denscombe, 2007). In this respect, the process of transcribing the interviews helped me to become familiar with the data and I reread the messages in the discussion forums several times, as part of the process of understanding the history of the discourse, particularly for the coding of cognitive presence (see section 7.2). This process helps to ensure the reliability of the coding process (as discussed in section 3.6.1).

The sample size for these final interviews was quite low – 17 participants, representing 33% of those interviewed the first time, 16% of those who completed the LE and 12% of those school teachers who started the LE. Furthermore, those volunteering are more likely to have something positive to say about their experience, whereas those who had real difficulties may have been reluctant to share their experience. Nevertheless, the interviews yielded sufficient information for the scope of this research which, when triangulated with the results obtained with the questionnaire, provided extra depth and meaning about the perception of the participants.

Content analysis

De Wever et al. (2006) assert that content analysis approaches must be accurate, precise, objective, reliable, replicable and valid. In their comparison of fifteen schemes for analysing online asynchronous discussion groups, they note that a large variety of concepts are used in describing online collaboration and that no unambiguous theory exists. They raise concerns about the lack of guidance for researchers in choosing the appropriate segment of the transcript to be coded, referred to as the *unit of analysis,* and the absence of sufficient information on the impact of using different coders or raters, called *inter-rater reliability*. However, in terms of the theoretical underpinning, inter-rater reliability and validation of the schemes, the CoI coding schemes used in the research compare favourably in their analysis.

In undertaking qualitative data analysis, one of the key decisions that researchers need to take is the definition of the unit of analysis. Fixed and easily identifiable units, such as a sentence or message, help to ensure replication and reliability, however the concept being investigated is not always easily delimited in terms of such objective semantic terms. On the other hand, more flexible units, such as the 'unit of meaning' proposed by Henri (1992), lend themselves to subjective and inconsistent interpretation (Rourke et al., 2001b) causing problems in inter-rater reliability. In choosing the unit of analysis for this research, I was guided by the recommendations of the authors of the coding schemes being applied, the nature of the discourse and the concept being analysed.

For the *in vivo* coding of data from interviews and from the questionnaire, I identified *thematic units* as the unit of analysis, defined as '…a single thought unit or idea unit that conveys a single item of information extracted from a segment of content' (Budd, Thorp and Donohue, 1967, cited in Rourke et al., 2001b, p.10). Similar to Henri's unit of meaning (Henri, 1992), thematic units recognise that segments of text – a sentence, a paragraph or the whole message – can contain multiple ideas that are not necessarily contradictory.

For the coding of the online discourse using the CoI coding schemes (see section 7.2), I used the whole message as the unit of analysis and allocated one code for each presence. If none of the proposed codes appeared applicable, then the code 'Other' was used to identify outliers, for example, for cognitive presence and the statement 'Come join us!' (Lenuta, female teacher from Romania).

For cognitive presence, Garrison et al. (2001) acknowledge that a single message may contain multiple indicators and therefore a rater must take into account the general attitude reflected in the message, its history (previous messages) and its further development (future messages). For social presence, Rourke et al. (2001a) discuss the relative virtues of using thematic units and syntactical units, and conclude that they have identified a unit which combines the best of both without providing further details. For teaching presence, Anderson et al. (2001) indicate that they use the message as the unit, but then go on to say that each message may exhibit several characteristics and therefore raters may code a message against all three categories. In subsequent papers, proponents of the CoI scheme conclude that the message level is probably the most practicable unit of analysis (Garrison et al., 2006; Shea et al., 2010; Persico et al., 2010) and indeed, I found it to be the most practicable for the research described here.

Coding online discussion forums can reveal additional insights that complement data collected by other methods. Nevertheless, it is a slow and at times laborious process which is very subjective. Using a single researcher (rater) to code all the relevant messages overcomes problems of inter-rater reliability (Meyer, 2006). However, it requires that the researcher revisits the coding several times to ensure key data is not missed, to confirm understanding and to ensure that the exercise is completed as quickly as possible in order to reduce problems associated with interpretation possibly changing over time. Whereas data coding is a manual process, the use of a CAQDAS tool did help to make the process as thorough and reliable as possible; for example, in facilitating the orderly merging of codes (for in vivo coding), maintaining an audit trail of the coding process and automating the production of reports summarising the results. This helped to reduce the chance that key data were overlooked.

In the research literature, several strategies are described for ensuring inter-related reliability which could be employed in larger action research projects involving content analysis. Coding may be preceded by training sessions in which all raters discuss examples of transcripts and their coding in order to help to align subsequent independent interpretations (Murphy and Ciszewska-Carr, 2005). A negotiated approach may be used to resolve differences in interpretation between parallel raters (Garrison et al., 2006). Different raters' interpretations of the same code may be checked using 'reliability samples' (De Wever et al., 2006) to arrive at a reliability index for the research.

The CoI framework and associated coding schemes

Several conclusions may be drawn from the experience in this research of using the coding schemes advocated for the CoI framework:

- The indicators proposed in the coding schemes for the three presences overlap and perhaps this is to be expected given their inter-twinned nature, as illustrated in Figure 1-6. However, this does mean that all three presences need to be considered as equally present, as it is not reliable to use the indicators to rate one presence over another, or the indicators need to be refined to avoid overlap – as suggested by Jézégou (2010).

- The CoI scheme for assessing cognitive presence (Garrison et al., 2001) benefits from the underlying Practical Inquiry Model which provides a sound theoretical framework to which the researcher may refer in applying the codes. Nevertheless, it is difficult to apply at all four levels with a high degree of consistency and certainty. It is, however, easier to use it in terms of trying to understand when critical thinking has surfaced and when it has not (i.e. distinguishing between the levels of Integration and Resolution, and Triggering and Exploration).

  I experimented with adding an extra code to cognitive presence in order to better reflect metacognition, as proposed by Persico et al. (2010). They refer to this code as Meta-reflection and suggest that it covers 'Evaluating own knowledge, skills, limits, cognitive processes' and 'Planning, monitoring, or adjusting own cognitive processes' (2010, p.10). However, in practice I found it hard to distinguish this code from the codes put forward by Garrison et al. (2001), as Persico et al. acknowledge (2010, p.10) 'it rarely happens that learners spontaneously manifest meta-cognitive processes'. Finally, I was convinced by the arguments put forward by Akyol and Garrison (2011) that metacognition is already inherent in the CoI scheme and reflected in the codes of Integration and Resolution.

- Almost every message (95%) that was coded exhibited social presence and the categories provided in the CoI scheme (Rourke et al., 2001a) did not really help with an understanding of the consequences for learning and for the community, other than to confirm whether it was present or not; a similar result to that found in other research, 'several specific indicators of social presence are very difficult to interpret reliably' (Shea et al., 2010, p.17). In particular, the category of Open communication was almost universally applicable, with most participants referring to each other by name and with the system itself facilitating easy use of a reply

function. As Rouke et al. (2001a, p.14) rightly note, 'Thus the presence of replies and quoted messages may be a superficial artifact of conferencing communication rather than a defining indicator of social presence'.

- Teaching presence has proved to be very important in this research and the CoI model (Anderson et al., 2001) was generally straightforward to apply. However, the definition of the category Facilitation seemed to be too open and, in practice, I applied a more rigorous interpretation that required messages to include more than a simple 'Thank you for your insightful comments' (2001, p.8) in response to a contribution. Moreover, the indicator Direct instruction with the example 'You're close, but you didn't account for……this is important because…' (p.10) suggests a learning approach based on the tutor as a knowledgeable expert, rather than a facilitator of learners' own learning in a social constructivist environment.

The CoI framework, originally devised for use in higher education, has been extremely useful for analysing the professional learning community of school teachers from a holistic perspective and for seeing the contribution of each presence to the success of the participants' learning. Its validation and use in many scholarly articles provides confidence of its reliability (Garrison et al., 2010a). Whereas the coding of online discourse only surfaces what happens explicitly (Enriquez, 2009; Shea et al., 2010), it has been a useful exercise providing insights that complement the data obtained via other methods. Suggestions for further research on the CoI coding schemes are discussed below in section 8.2.5.

Gender balance

The LE organisers did not explicitly record the gender of the participants for the two LEs involved in this research. However, the analysis of the respondents to the questionnaires after the two LEs (see sections 4.1.1 and 6.2.1) suggests that a significant majority of both events were female (91% and 88%, respectively). This is slightly more than the average of 86% females in four previous LEs (eTwinning, 2009). In a recent report for the European Commission (EU, 2012), it was noted that over 60% of all teachers in primary and secondary education in Europe are women and in some countries the majority is as high as 80%. Whereas the gender balance in the LEs may be representative of that found in many schools, it is not necessarily representative of that found in other instances of professional online learning communities, such as one involving doctors. Gender was not specifically addressed in this research and it is not known to what extent the results were influenced by the predominance of females – though there is nothing in the results to suggest that gender

was an issue. Gender differences in online communities could be usefully studied in further research, as suggested in section 8.2.5.

8.2.4 Implications for practice

Policymakers and *providers of teachers' continuous professional development* (CPD) may be interested in how the research illustrates the value for school teachers of learning in an online community, of experiencing what they are learning in the context of their everyday teaching practice and of reflecting on their experience with peers. Moreover, the research illustrates how school teachers who see and experience for themselves the impact of using ICT in the classroom may become advocates of technology enhanced learning and innovative teaching practice. The research suggests that school teachers have a vital role to play in designing and orchestrating learning in online communities and that the competence needed in online moderation for such a role may be developed through non-formal online CPD activities – like the eTwinning Learning Events (LE).

School teachers also may be interested in how the research illustrates the value of their collaborating with peers in an online community, of trying out ideas in practice to see the impact on pupils' learning and of being open to sharing and reflecting on experience with peers. The research illustrates how school teachers may encourage collaboration, cognition and mutual support in an online community of pupils through online moderation that engenders social interaction and orchestrates learning at key points.

Organisers of the eTwinning initiative may be interested in the changes applied to the LE in the research and the analysis which suggests that they helped to reinforce competence development: allowing time to try out ideas in practice, a social corner for school teachers to meet informally and specific activities for critical reflection with peers. The research suggests that it may be appropriate to have tutors who are competent in online moderation leading the LEs. It also suggests that the development of competence in online moderation may be an explicit objective of any LE involving school teachers collaborating, learning and sharing in an online community. These aspects are summarised in an emerging model for eTwinning LEs presented in Figure 8-1 and Figure 8-2; note that aspects concerning online moderation are presented separately as they may be a useful reference for eTwinning tutors and online moderators (eModerators) in general.

Aspects relevant to school teachers' continuous professional development (CPD) in an eTwinning Learning Event (LE):

- ✓ **Online learning community**. An eTwinning LE is effectively a community of teachers, which can provide a supportive, trusted environment to exchange experience and share good practice during CPD activities at a distance. However, it takes time to establish a community and LEs need to be sufficiently long for relationships and trust to develop through social interaction (e.g. three to four weeks).
- ✓ **Social space**. To support social interaction, it is useful to have a dedicated space for informal discussion to take place between participants at any time during the course of the activities (e.g. a virtual 'staff room').
- ✓ **Critical reflection**. Teachers may benefit from discussions with their peers, as part of the CPD activities, on what they are learning and their practical experience. This reflection is both intellectual and emotional. It helps them to understand the wider consequences for their own teaching practice and their professional competence development.
- ✓ **Active 'lurking'**. Less experienced teachers who are unable to try things out for themselves or do not contribute fully to the discussions are still likely to benefit from participating in a community that includes more experienced teachers.
- ✓ **Teaching practice**. Teachers are more likely to be motivated to participate if the community and the CPD activities are clearly focused on improving teaching practice and the learning outcomes of pupils. Moreover, they are more likely to be convinced of new ideas if they have the time and opportunity to try them out in their everyday teaching practice as part of the CPD activities.
- ✓ **Online moderation**. LEs provide teachers with the opportunity to develop their competence in online collaboration and online moderation as well as in the specific topic of the event.
- ✓ **Tutor support**. The CPD activities and online discussions are likely to be more effective for cognitive and competence development if they are led by a tutor who is experienced in online moderation (see Figure 8-2).

Figure 8-1 Emerging model for school teachers' CPD in eTwinning Learning Events

Aspects relevant to online moderation of an eTwinning Learning Event (LE) by a tutor:

- ✓ **Key role of the tutor**. The tutor has an essential role to play in designing activities and orchestrating learning, and therefore should be experienced in online moderation. It is preferable that the tutor is also knowledgeable about the subject(s) being addressed in the activities or that the expertise exists with some of the participant teachers.
- ✓ **Tutor presence**. The availability of a tutor gives the teachers confidence that there is someone there to support them if needed and can help to engender a sense of community. The tutor should guide the LE according to the experience of the teachers and their development over time. It may be appropriate to offer feedback and support at the start of the activities, but then to step back as the teachers become more autonomous and offer each other support.
- ✓ **Collaboration**. The community is fostered by activities that encourage participants to get to know one another and to collaborate (e.g. welcome activities and joint projects). Teachers may prefer to collaborate in small groups and pre-allocating the participants according to some common interest may help them to get started (e.g. in groups of up to 10 participants who teach pupils of similar ages).
- ✓ **Social presence.** The teachers should be supported to get to know one another via the functionalities offered in the online learning environment for social interaction (e.g. profile pages, a 'staff room' for informal discussion, etc). Social and emotional aspects are important and should form an integral part of the activities (e.g. sharing feelings during discussions).
- ✓ **Social practice**. It may be useful for the tutor to establish basic rules of good practice for social interaction in the discussion forums and social space. These rules could be usefully developed with the LE participants before the CPD activities by asking them what they expect from one another, from the tutor and from the community as a whole.
- ✓ **Reflection-in-practice**. Wherever possible, teachers should be encouraged and supported to act upon their reflections. This includes, for example, giving them the possibility to change groups if they find that collaboration is not working.

- ✓ **Cognitive presence**. During the course of the LE, the design of the activities and the guidance of the tutor should encourage teachers to try out in their teaching practice what they are learning and to discuss their experience with their peers. The tutor should encourage critical thinking in the discussions by, for example, initially prompting reflection around key questions. Teachers are likely to need encouragement to further explain their answers so that peers may better understand and build upon their contribution. Not all teachers will want to contribute to the discussion, especially those who are less experienced or less confident. Nevertheless, they may still be actively reading, learning and applying ideas in their own practice and hence such 'lurking' is positive for their professional development.
- ✓ **Creative expression**. The structured discussions may be usefully balanced by opportunities for the teachers to express themselves freely and creatively using text, pictures, diagrams and videos (using online blogs, Google docs®, YouTube®, etc).
- ✓ **Competence in online moderation.** In order to support the development of teachers' competence in online collaboration and moderation, in addition to the main subject of the LE, the CPD activities could usefully finish with a final reflection on whether teachers' expectations for collaboration had been met, the lessons they had learnt from their experience and how their own competence in online moderation had developed.
- ✓ **Closing the community**. Finally, the tutor should close-down the community once the CPD activities have finished in order to avoid disappointment due to the reduction in interaction that typically follows the end of learning activities.

Figure 8-2 Emerging model for online moderation (eModeration) of eTwinning Learning Events

8.2.5 Suggestions for further research

This research took place in the context of an online learning community involving school teachers who are working in regions with quite different educational policies, strategies and contexts for using ICT in the classroom. Whereas an examination of these aspects is beyond the scope of this research, further research is needed to assess their influence on the ability of school teachers to effectively apply, in their own teaching practice, what they learn through their involvement in an international community of school teachers, such as eTwinning. Similarly, an investigation of the impact on pupils' learning was beyond the scope of this research. Yet, it would be useful to see, through further research, whether some teachers' perception that trying out new ideas in practice can lead to positive improvement is matched by positive changes in their pupils' attitudes and learning.

This research involved an online community that is rich in cultural and linguistic diversity, with participants of different ages and gender. These issues were not specifically examined in this research, yet existing research has highlighted the challenges associated with gender and power differences in an online community and the consequences of focusing on consensus rather than on valuing diversity (Hodgson and Reynolds, 2005; Ferreday and Hodgson, 2009; Reynolds and Trehan, 2003). Further research is therefore needed in this area, to provide school teachers with practical examples of effective teaching strategies for supporting pupils' who are learning online with peers.

The analysis in this research suggests that the reflection, expression of interpretation and group sensemaking that occurred in the forums was a new experience for some participants and that this may be related to their educational experience. Further research is needed to examine the impact of prior educational experience on the ability of learners to learn effectively in a critical community.

Further research is needed to develop suitable indicators for social presence and teaching presence for the Community of Inquiry (CoI) framework that better reflect the social affordances of modern social computing and a social constructivist approach to learning in online learning communities. Further research could also usefully complement the use of online content analysis with other methods, such as the use of genres (Enriquez, 2009), to surface more of what happens in learning in an online learning community.

Finally, further research is needed to continue the work presented here and examine other examples of online professional learning communities to see to what extent the conclusions presented here are relevant in other contexts.

Reference List

Abedin, B., Daneshgar, F. & D'ambra, J. (2011) 'Do nontask interactions matter? The relationship between nontask sociability of computer supported collaborative learning and learning outcomes', *British Journal of Educational Technology*, Blackwell Publishing Ltd [online], http://dx.doi.org/10.1111/j.1467-8535.2011.01181.x (Accessed 15.05.2011).

Akbari, R. (2007) 'Reflections on reflection: A critical appraisal of reflective practices in L2 teacher education', *System,* 35 (2), pp.192-207.

Akyol, Z., Arbaugh, J. B., Cleveland-Innes, M., Garrison, D., Ice, P., Richardson, J. & Swan, K. (2009) 'A response to the review of the community of inquiry framework', *Journal of Distance Education,* 23 (2), pp.123-136.

Akyol, Z. & Garrison, D. R. (2008) 'The Development of a Community of Inquiry over Time in an Online Course: Understanding the Progression and Integration of Social, Cognitive and Teaching Presence', *Journal of Asynchronous Learning Networks*, pp.3-22.

Akyol, Z. & Garrison, D. R. (2011) 'Assessing metacognition in an online community of inquiry', *The Internet and Higher Education,* 14 (3), pp.183-190.

Akyol, Z., Vaughan, N. & Garrison, D. R. (2009) 'The impact of course duration on the development of a community of inquiry', *Interactive Learning Environments*, pp.231-246.

Ala-Mutka, K. (2010) *Learning in informal online networks and communities,* Institute for Prospective Technological Studies (IPTS), JRC, European Commission. [online], http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=3059 (Accessed 18.11.2010).

Ala-Mutka, K., Punie, Y. & Redecker, C. (2008) *Digital Competence for Lifelong Learning - a policy brief*, Institute for Prospective Technological Studies (IPTS), JRC, European Commission [online], http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=1820. (Accessed 21.01.2010).

Anderson, T. (2008a) 'Teaching in an online learning context', Theory and practice of online learning, 2nd ed., pp.343-365, AU Press.

Anderson, T. (2008b) *Towards a theory of online learning,* 2 ed., Edmonton, AU Press, Athabasca University.

Anderson, T. & Dron, J. (2011) 'Three generations of distance education pedagogy', *The International Review of Research in Open and Distance Learning*, 12 (3), pp.80-97, [online], http://www.irrodl.org/index.php/irrodl/article/view/890/1663 (Accessed 09.04.2012).

Anderson, T., Rourke, L., Garrison, D. & Archer, W. (2001) 'Assessing teaching presence in a computer conferencing context', *Journal of Asynchronous Learning Networks,* 5 (2), pp.1-17.

Angeli, C., Valanides, N. & Bonk, C. J. (2003) 'Communication in a web-based conferencing system: the quality of computer-mediated interactions', *British Journal of Educational Technology,* 34 (1), pp.31-43.

Arbaugh, J. B. (2007) 'An Empirical Verification of the Community of Inquiry Framework', *Journal of Asynchronous Learning Networks,* 11 (1), pp.73-85.

Arbaugh, J. B., Cleveland-Innes, M., Diaz, S. R., Garrison, D. R., Ice, P., Richardson, J. C. & Swan, K. P. (2008) 'Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample', *The Internet and Higher Education,* 11 (3-4), pp.133-136.

Arbaugh, J. B. & Hwang, A. (2006) 'Does "teaching presence" exist in online MBA courses?', *The Internet and Higher Education,* 9 (1), pp.9-21.

Arnold, N. & Ducate, L. (2006) 'Future foreign language teachers' social and cognitive collaboration in an online environment', *Language Learning & Technology,* 10 (1), pp.42-66.

Aubusson, P., Schuck, S. & Burden, K. (2009) 'Mobile learning for teacher professional learning: benefits, obstacles and issues', *ALT-J: Research in Learning Technology,* 17 (3), pp.233 - 247.

Austin, R., Smyth, J., Rickard, A., Quirk-Bolt, N. & Metcalfe, N. (2010) 'Collaborative digital learning in schools: teacher perceptions of purpose and effectiveness', *Technology, Pedagogy and Education,* 19 (3), pp.327 - 343.

Avalos, B. (2011) 'Teacher professional development in Teaching and Teacher Education over ten years', *Teaching and Teacher Education,* 27 (1), pp.10-20.

Bangert, A. W. (2008) 'The influence of social presence and teaching presence on the quality of online critical inquiry', *Journal of Computing in Higher Education,* 20 (1), pp.34-61.

Bangert, A. W. (2009) 'Building a validity argument for the community of inquiry survey instrument', *The Internet and Higher Education,* 12 (2), pp.104-111.

Barab, S., Kling, R. & Gray, J. (Eds.) (2004) *Designing for virtual communities in the service of learning,* Cambridge, Cambridge University Press.

Barab, S. A., Makinster, J. G. & Scheckler, R. (2003) 'Designing system dualities: Characterizing a web-supported professional development community', in Barab, S. A., Kling, R. & Gray, J. (Eds.), Designing for virtual communities in the service of learning. pp.53-119, Cambridge, Cambridge University Press.

Bassey, M. (1999) 'Methods of enquiry and the conduct of case study research', Case Study Research in Educational Settings. pp.65-91, Buckingham, Open University Press.

Bélisle, C. (2007) 'eLearning and Intercultural dimensions of learning theories and teaching models', *eLearning Papers*, [online], http://www.elearningpapers.eu/index.php?page=home&vol=7 (Accessed 01.10.2009).

Berlanga, A. & Vuorikari, R. (2012), 'Learning networks for professional development: current research approaches and future trends', *8th International Conference on Networked Learning 2012,* Maastricht, pp.412-428 [online], http://www.networkedlearningconference.org.uk/abstracts/pdf/rajagopal_sym.pdf (Accessed 20.04.2012).

Blaxter, L., Hughes, C. & Tight, M. (2006) *How to research,* 3rd ed., Maidenhead, Open University Press.

Bolam, R. & Mcmahon, A. (2004) 'Literature, definitions and models: Towards a conceptual map', *International handbook on the continuing professional development of teachers*, pp.33-63.

Bolam, R., Mcmahon, A., Stoll, L., Thomas, S., Wallace, M., Greenwood, A., Hawkey, K., Ingram, M., Atkinson, A. & Smith, M. (2005) *Creating and Sustaining Effective Professional Learning Communities*, DfES Publications.

Boud, D. (1988) 'Moving Towards Autonomy ', in Boud, D. (Ed.), Developing Student Autonomy in Learning. pp.17-39, London, Kogan Page.

Boud, D. & Walker, D. (1998) 'Promoting reflection in professional courses: The challenge of context', *Studies in Higher Education,* 23 (2), pp.191-206.

Boyle, B., While, D. & Boyle, T. (2004) 'A longitudinal study of teacher change: what makes professional development effective?', *Curriculum Journal,* 15 (1), pp.45-68.

Boyle, T. & Cook, J. (2004) 'Discussion Understanding and using technological affordances: a commentary on Conole and Dyke', *ALT-J,* 12 (3), pp.295 - 299.

Brook, C. & Oliver, R. (2003) 'Online learning communities: Investigating a design framework', *Australian Journal of Educational Technology*, 19 (2), pp.139-160, [online], http://ascilite.org.au/ajet/ajet19/brook.html (Accessed 26.12.11).

Buraphadeja, V. & Dawson, K. (2008) 'Content Analysis in Computer-Mediated Communication: Analyzing Models for Assessing Critical Thinking Through the Lens of Social Constructivism', *American Journal of Distance Education,* 22 (3), pp.130-145.

Cachia, R. & Punie, Y. (2012), 'Teacher collaboration in the context of networked learning. Current eTwinning practices and future perspectives', *8th International Conference on Networked Learning 2012,* Maastricht, pp.429-436 [online], http://www.networkedlearningconference.org.uk/abstracts/pdf/cachia.pdf (Accessed 20.04.2012).

Capel, S., Leask, M. & Turner, T. (2009) *Learning to teach in the Secondary School - A Companion to School Experience,* 5th ed, Routledge.

Castells, M. (2000) *The rise of the network society,* 2nd ed., Oxford, Blackwell Publishing.

Chan, J. C. C., Hew, K. F. & Cheung, W. S. (2009) 'Asynchronous online discussion thread development: examining growth patterns and peer-facilitation techniques', *Journal of Computer Assisted Learning,* 25 (5), pp.438-452.

Chen, I. Y. L. (2007) 'The factors influencing members' continuance intentions in professional virtual communities a longitudinal study', *Journal of Information Science,* 33 (4), pp.451-467.

Cochran-Smith, M. & Lytle, S. L. (1999) 'Relationships of Knowledge and Practice: Teacher Learning in Communities', *Review of Research in Education,* 24, pp.249-305.

Cohen, A. P. (1985) *The symbolic construction of community*, Taylor & Francis [online], http://lib.myilibrary.com.ezproxy.lancs.ac.uk?ID=32778 (Accessed 31.12.2011).

Cohen, D. & Prusak, L. (2001) *In good company: How social capital makes organizations work*. Cambridge, MA, Harvard Business Press.

Cohen, L., Manion, L. & Morrison, K. (2007) *Research Methods in Education,* 6th ed., Abingdon, Routledge.

Conole, G. & Dyke, M. (2004) 'Discussion Understanding and using technological affordances: a response to Boyle and Cook', *ALT-J,* 12 (3), pp.301 - 308.

Costa, A. L. & Kallick, B. (1993) 'Through the Lens of a Critical Friend', *Educational Leadership,* 51 (2), pp.49-51.

Creswell, J. (2009) *Research design: Qualitative, quantitative, and mixed methods approaches,* 3rd ed., California, Sage Publications Inc.

Daele, A., Deschryver, N., Gorge, D. & Künzel, M. (2007) 'Managing Knowledge within Communities of Practice: Analysing Needs and Developing Services', *eLearning Papers*, 5, [online], http://www.elearningpapers.eu/index.php?page=doc&doc_id=10222&doclng=6 (Accessed 26.12.2008).

Daniel, B., Schwier, R. & Mccalla, G. (2003) 'Social capital in virtual learning communities and distributed communities of practice', *Canadian Journal of Learning and Technology,* 29 (3), pp.113-139.

Daniel, B., Schwier, R. & Mccalla, G. (2003) 'Social capital in virtual learning communities and distributed communities of practice', *Canadian Journal of Learning and Technology,* 29 (3), pp.113-139.

Darling, L. F. (2001) 'When Conceptions Collide: Constructing a community of inquiry for teacher education in British Columbia', *Journal of Education for Teaching: International research and pedagogy,* 27 (1), pp.7 - 21.

Day, C. & Sachs, J. (2004) 'Professionalism, performativity and empowerment : discourses in the politics, policies and purposes of continuing professional development', in Day, C. & Sachs, J. (Eds.), International handbook on the continuing professional development of teachers. pp.3-32, Maidenhead, Open University Press.

De Wever, B., Schellens, T., Valcke, M. & Van Keer, H. (2006) 'Content analysis schemes to analyze transcripts of online asynchronous discussion groups: A review', *Computers & Education,* 46 (1), pp.6-28.

Denscombe, M. (2007) *The Good Research Guide: For Small-scale Social Research Projects*. Maidenhead, Open University Press.

Derry, J. (2007) 'Epistemology and conceptual resources for the development of learning technologies', *Journal of Computer Assisted Learning,* 23 (6), pp.503-510.

Dewey, J. (1959) *Dewey on education*. New York, Teachers college press.

Dewiyanti, S., Brand-Gruwel, S., Jochems, W. & Broers, N. J. (2007) 'Students' experiences with collaborative learning in asynchronous Computer-Supported Collaborative Learning environments', *Computers in Human Behavior,* 23 (1), pp.496-514.

Dillenbourg, P. (2008) 'Integrating technologies into educational ecosystems', *Distance Education,* 29 (2), pp.127 - 140.

Dirckinck-Holmfeld, L., Esnault, L., Gustafson, J., Hodgson, V., Lindström, B., Jones, C., Ponti, M., Ryberg, T. & Tickner, S. (2004) *EQUEL position paper - Special Interest Group 6: the theory and practice of Computer Supported Collaborative Learning,* Coordinated by Lancaster University, EU Commission e-learning initiative. [online], http://vbn.aau.dk/ws/fbspretrieve/5782992/SIG6_Position_Paper.pdf (Accessed 21.03.2010).

Duncan-Howell, J. (2010) 'Teachers making connections: Online communities as a source of professional learning', *British Journal of Educational Technology,* 41 (2), pp.324-340.

Enriquez, J. G. (2009) 'Discontent with content analysis of online transcripts', *ALT-J: Research in Learning Technology,* 17 (2), pp.101 - 113.

Eraut, M. (1994) *Developing professional knowledge and competence*. Abingdon, Routledge.

Eraut, M. (1995) 'Schon Shock: a case for refraining reflection-in-action?', *Teachers and Teaching,* 1 (1), pp.9 - 22.

Eraut, M. (1998) 'Concepts of competence', *Journal of Interprofessional Care,* 12 (2), pp.127-139.

Eraut, M. (2002), 'Conceptual Analysis and Research Questions: Do the Concepts of "Learning Community" and "Community of Practice" Provide Added Value?', *Annual Meeting of the American Educational Research Association* New Orleans, 1-5 April 2002, [online], http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED466030 (Accessed 26.12.2011).

Ertmer, P. (2005) 'Teacher pedagogical beliefs: The final frontier in our quest for technology integration?', *Educational Technology Research and Development,* 53 (4), pp.25-39.

Etwinning (2009) *Beyond school projects - a report on eTwinning 2008-2009,* Brussels, eTwinning Central Support Service. [online], http://resources.eun.org/etwinning/25/EN_eTwinning_165x230_Report.pdf (Accessed 26.01.2010).

Eu (2001) *The eLearning Action Plan–Designing tomorrow's education,* Brussels, European Commission [online], http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0172:FIN:EN:PDF (Accessed 24.01.2010).

Eu (2002) *Key Competencies - A developing concept in general compulsory education,* Brussels, Eurydice [online], http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/archives/032EN.zip (Accessed 06.01.2012).

Eu (2003) *Commission Staff Working Paper, eLearning Designing Tomorrow's Education, a Mid-Term Report, as requested by the Council resolution of 13 July 2001,* European Commission [online], http://ec.europa.eu/education/archive/elearning/doc/mid_term_report_en.pdf (Accessed 26.12.2008).

Eu (2004) *Key Competences for Lifelong Learning, a European Reference Framework* Brussels, European Commission [online], http://ec.europa.eu/education/policies/2010/doc/basicframe.pdf (Accessed 13.06.2009).

Eu (2008) *Commission Staff Working Document, The use of ICT to support innovation and lifelong learning for all - A report on progress, SEC(2008) 2629 final,* Brussels, European Commission [online], http://ec.europa.eu/education/lifelong-learning-programme/doc/sec2629.pdf (Accessed 21.01.2010).

Eu (2010) *LEARNING, INNOVATION and ICT - Lessons learned by the ICT cluster, Education & Training 2010 programme* Brussels, European Commission. [online], http://www.kslll.net/PeerLearningClusters/clusterDetails.cfm?id=8 (Accessed 18.11.2010).

Eu (2012) *Key Data on Education in Europe 2012,* Brussels, Eurydice [online], http://eacea.ec.europa.eu/education/eurydice/documents/key_data_series/134EN.pdf (Accessed 10.08.2012).

Eun (2009) *STEPS - Study of the impact of technology in primary schools,* European Schoolnet for the European Commission, EACEA. [online], http://eacea.ec.europa.eu/llp/studies/study_impact_technology_primary_school_en.php (Accessed 05.02.2012).

Ferreday, D. & Hodgson, V. (2009), 'The tyranny of participation and collaboration in networked learning ', *6th International Conference on Networked Learning,* Halkidiki, Greece, 5-6 May 2009, pp.640-647 [online], http://www.networkedlearningconference.org.uk/past/nlc2008/abstracts/PDFs/Hodgson_640-647.pdf (Accessed 26.04.2009).

Ferry, B., Kiggins, J., Hoban, G. & Lockyer, L. (2000) 'Using computer-mediated communication to form a knowledge-building community with beginning teachers', *Educational Technology & Society,* 3 (3), pp.496-505.

Fox, S. (2005) 'An actor-network critique of community in higher education: implications for networked learning', *Studies in Higher Education,* 30 (1), pp.95-110.

Gannon-Leary, P. M. & Fontainha, E. (2007) 'Communities of Practice and virtual learning communities: benefits, barriers and success factors', *eLearning Papers*, 5, [online], http://www.elearningpapers.eu/index.php?page=doc&doc_id=10219&doclng=6 (Accessed 26.12.2008).

Garrison, D. R. (1991) 'Critical thinking and adult education: a conceptual model for developing critical thinking in adult learners', *International Journal of Lifelong Education,* 10 (4), pp.287 - 303.

Garrison, D. R. (2007) 'Online community of inquiry review: Social, cognitive, and teaching presence issues', *Journal of Asynchronous Learning Networks,* 11 (1), pp.61-72.

Garrison, D. R., Anderson, T. & Archer, W. (2000) 'Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education', *The Internet and Higher Education,* 2 (2-3), pp.87-105.

Garrison, D. R., Anderson, T. & Archer, W. (2001) 'Critical thinking, cognitive presence, and computer conferencing in distance education', *American Journal of Distance Education,* 15 (1), pp.7-23.

Garrison, D. R., Anderson, T. & Archer, W. (2010a) 'The first decade of the community of inquiry framework: A retrospective', *The Internet and Higher Education,* 13 (1-2), pp.5-9.

Garrison, D. R. & Arbaugh, J. B. (2007) 'Researching the community of inquiry framework: Review, issues, and future directions', *The Internet and Higher Education,* 10 (3), pp.157-172.

Garrison, D. R. & Cleveland-Innes, M. (2005) 'Facilitating cognitive presence in online learning: Interaction is not enough', *American Journal of Distance Education,* 19 (3), pp.133-148.

Garrison, D. R., Cleveland-Innes, M. & Fung, T. S. (2010b) 'Exploring causal relationships among teaching, cognitive and social presence: Student perceptions of the community of inquiry framework', *The Internet and Higher Education,* 13 (1-2), pp.31-36.

Garrison, D. R., Cleveland-Innes, M., Koole, M. & Kappelman, J. (2006) 'Revisiting methodological issues in transcript analysis: Negotiated coding and reliability', *The Internet and Higher Education,* 9 (1), pp.1-8.

Gerbic, P. & Stacey, E. (2005) 'A purposive approach to content analysis: Designing analytical frameworks', *The Internet and Higher Education,* 8 (1), pp.45-59.

Gibson, J. (1986) *The Ecological Approach to Visual Perception*. Hillsdale, Lawrence Erlbaum Associates.

Gilleran, A. (2007) 'eTwinning – A New Path for European Schools', *eLearning Papers*, 5, [online], http://www.elearningpapers.eu/index.php?page=doc&doc_id=10218&doclng=6 (Accessed 26.12.2008).

Goodyear, P. (2002) 'Psychological foundations for networked learning', Networked learning: perspectives and issues. pp.49-75, New York, Springer-Verlag.

Goodyear, P., Jones, C., Asensio, M., Hodgson, V. & Steeples, C. (2004) 'Undergraduate students' experiences of networked learning in UK higher education: A survey-based study', *Advances in Research on Networked Learning,* 4, pp.19-121.

Goodyear, P. & Zenios, M. (2007) 'Discussion, collaborative knowledge work and epistemic fluency', *British Journal of Educational Studies,* 55 (4), pp.351-368.

Gray, B. (2004) 'Informal learning in an online community of practice', *Journal of Distance Education,* 19 (1), pp.20-35.

Gray, D. E. (2004) *Doing research in the real world*. London, SAGE Publications Ltd.

Griffiths, V. (2000) 'The reflective dimension in teacher education', *International Journal of Educational Research,* 33 (5), pp.539-555.

Grossman, P., Wineburg, S. & Woolworth, S. (2000) *What makes teacher community different from a gathering of teachers?,* Center for the Study of Teaching and Policy, University of Washington. [online], http://java.cs.vt.edu/public/classes/communities/readings/Community-GWW-01-2001.pdf (Accessed 29.07.2011).

Groundwater-Smith, S. & Dadds, M. (2004) 'Critical practitioner inquiry: Towards responsible professional communities of practice', in Day, C. & Sachs, J. (Eds.), International handbook on the continuing professional development of teachers. pp.238-263, Maidenhead, Open University Press.

Gunawardena, C. (1995) 'Social presence theory and implications for interaction and collaborative learning in computer conferences', *International Journal of Educational Telecommunications,* 1 (2), pp.147-166.

Gunawardena, C., Lowe, C. & Anderson, T. (1997) 'Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing', *Journal of educational computing research,* 17 (4)

Gunawardena, C. & Zittle, F. (1997) 'Social Presence as a Predictor of Satisfaction within a Computer-Mediated Conferencing Environment', *American Journal of Distance Education,* 11 (3), pp.8-26.

Guskey, T. R. (2002) 'Professional Development and Teacher Change', *Teachers and Teaching: Theory and Practice,* 8 (3), pp.381 - 391.

Hargreaves, A. (1998) 'The emotional practice of teaching', *Teaching and Teacher Education,* 14 (8), pp.835-854.

Henri, F. (1992) 'Computer conferencing and content analysis', in Kaye, A. R. (Ed.), Collaborative learning through computer conferencing: The Najaden papers. pp.117-136, London, Springer-Verlag.

Hildreth, P. & Kimble, C. (2008) 'Introduction and overview', in Kimble, C., Hildreth, P. & Bourdon, I. (Eds.), Communities of Practice: Creating Learning Environments for Educators, Volume 1. pp.ix-xvi, Charlotte, Information Age Pub Inc.

Hlapanis, G. & Dimitracopoulou, A. (2007) 'The School-Teacher's Learning Community: matters of communication analysis', *Technology, Pedagogy and Education,* 16 (2), pp.133 - 151.

Hodgson, V. & Reynolds, M. (2002), 'Networked learning and ideas of community', *Networked Learning Conference 2002,* [online] http://www.networkedlearningconference.org.uk/past/nlc2002/proceedings/symp/06.htm - 06b (Accessed 27.12.2011).

Hodgson, V. & Reynolds, M. (2005) 'Consensus, difference and 'multiple communities' in networked learning', *Studies in Higher Education,* 30 (1), pp.11 - 24.

Hodgson, V. & Watland, P. (2004) 'Researching Networked Management Learning', *Management Learning,* 35 (2), pp.99-116.

Holmes, B. & Sime, J.-A. (2012), 'Online Learning Communities for Teachers' Continuous Professional Development: case study of an eTwinning Learning Event ', *8th International Conference on Networked Learning 2012,* Maastricht, pp.128-135 [online], http://www.networkedlearningconference.org.uk/abstracts/pdf/holmes.pdf (Accessed 20.04.2012).

Hramiak, A. (2010) 'Online learning community development with teachers as a means of enhancing initial teacher training', *Technology, Pedagogy and Education,* 19 (1), pp.47 - 62.

Ice, P., Curtis, R., Phillips, P. & Wells, J. (2007) 'Using asynchronous audio feedback to enhance teaching presence and students' sense of community', *Journal of Asynchronous Learning Networks,* 11 (2), pp.3-25.

Irwin, B. & Hramiak, A. (2010) 'A discourse analysis of trainee teacher identity in online discussion forums', *Technology, Pedagogy and Education,* 19 (3), pp.361 - 377.

Jackson, D. & Temperley, J. (2007) 'From professional learning community to networked learning community', *Professional learning communities: Divergence, depth and dilemmas*, pp.45-62.

Jay, J. K. & Johnson, K. L. (2002) 'Capturing complexity: A typology of reflective practice for teacher education', *Teaching and Teacher Education,* 18 (1), pp.73-85.

Jézégou, A. (2010) 'Community of Inquiry in E-learning: A Critical Analysis of Garrison and Anderson Model', *Journal of Distance Education*, 24 (3), pp.1-18, [online], http://www.jofde.ca/index.php/jde/article/view/707/1141. (Accessed 30.05.2011).

Jones, C. (2004) 'Networks and learning: communities, practices and the metaphor of networks', *ALT-J,* 12 (1), pp.81-93.

Jones, C. & Esnault, L. (2004), 'The metaphor of networks in learning: Communities, collaboration and practice', *4th International conference on Networked Learning,* Lancaster, UK, [online], http://www.networkedlearningconference.org.uk/past/nlc2004/proceedings/symposia/symposium13/jones_esnault.htm (Accessed 01.09.2011).

Kanuka, H. & Anderson, T. (1998) 'Online social interchange, discord, and knowledge construction', *Journal of Distance Education,* 13 (1), pp.57-74.

Kanuka, H., Rourke, L. & Laflamme, E. (2007) 'The influence of instructional methods on the quality of online discussion', *British Journal of Educational Technology,* 38 (2), pp.260-271.

Kavanaugh, A. L., Reese, D. D., Carroll, J. M. & Rosson, M. B. (2005) 'Weak Ties in Networked Communities', *The Information Society,* 21 (2), pp.119-131.

Ke, F. (2010) 'Examining online teaching, cognitive, and social presence for adult students', *Computers & Education,* 55 (2), pp.808-820.

Kimble, C., Hildreth, P. & Bourdon, I. (2008) *Communities of Practice: Creating Learning Environments for Educators, Volume 2*, Information Age Pub Inc.

Kincheloe, J. L. (2003) *Teachers As Researchers : Qualitative Inquiry As a Path to Empowerment*, 2nd ed, Taylor & Francis Routledge [online], http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=80313&site=ehost-live (Accessed 04.01.2012).

Kirschner, P. A. & Lai, K.-W. (2007) 'Online communities of practice in education', *Technology, Pedagogy and Education,* 16 (2), pp.127 - 131.

Koshy, V. (2010) *Action research for improving educational practice,* 2nd ed., London, Sage publications Ltd.

Kreijns, K., Kirschner, P. A. & Jochems, W. (2002) 'The sociability of computer-supported collaborative learning environments', *Educational Technology & Society,* 5 (1)

Kreijns, K., Kirschner, P. A. & Jochems, W. (2003) 'Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: a review of the research', *Computers in Human Behavior,* 19 (3), pp.335-353.

Kreijns, K., Kirschner, P. A., Jochems, W. & Van Buuren, H. (2007) 'Measuring perceived sociability of computer-supported collaborative learning environments', *Computers & Education,* 49 (2), pp.176-192.

Lai, K. W., Pratt, K., Anderson, M. & Stigter, J. (2006) *Literature Review and Synthesis: Online Communities of Practice,* Ministry of Education, New Zealand. [online], http://isteam.wikispaces.com/space/showimage/online+communities+of+practice.pdf (Accessed 27.07.2008).

Lancaster University (2009) Research Ethics and Research Governance at Lancaster: a code of practice, GAP/2009/0521.

Laurillard, D. (2008) 'Technology Enhanced Learning as a Tool for Pedagogical Innovation', *Journal of Philosophy of Education,* 42 (3-4), pp.521-533.

Laurillard, D., Stratfold, M., Luckin, R., Plowman, L. & Taylor, J. (2000) 'Affordances for Learning in a Non-linear Narrative Medium', *Journal of Interactive Media in Education (JIME)*, 2, [online], http://jime.open.ac.uk/jime/issue/view/18 (Accessed 30.12.2011).

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

Leask, M. & Younie, S. (1999), 'Characteristics of effective on-line communities for teachers: issues arising from research', *EDEN 1999 Open Classrooms Conference,* Balatonfured, European Distance and E-learning Network (EDEN)

Leask, M. & Younie, S. (2001a) 'Building on-line communities for teachers: issues emerging from research', in Leask, M. (Ed.), Issues in teaching using ICT. pp.223-232, London, Routledge-Farmer.

Leask, M. & Younie, S. (2001b) 'The European schoolnet. an online European community for teachers: a valuable professional resource?', *Teacher Development: An international journal of teachers' professional development,* 5 (2), pp.157 - 175.

Levy, P. (2003) 'A methodological framework for practice-based research in networked learning', *Instructional Science,* 31 (1), pp.87-109.

Lim, W.-Y., So, H.-J. & Tan, S.-C. (2010) 'eLearning 2.0 and new literacies: are social practices lagging behind?', *Interactive Learning Environments,* 18 (3), pp.203 - 218.

Lockhorst, D., Admiraal, W. & Pilot, A. (2010) 'CSCL in teacher training: what learning tasks lead to collaboration?', *Technology, Pedagogy and Education,* 19 (1), pp.63-78.

Lomicka, L. & Lord, G. (2007) 'Social presence in virtual communities of foreign language (FL) teachers', *System,* 35 (2), pp.208-228.

Macdonald, J. & Poniatowska, B. (2011) 'Designing the professional development of staff for teaching online: an OU (UK) case study', *Distance Education,* 32 (1), pp.119-134.

Marra, R., Moore, J. & Klimczak, A. (2004) 'Content analysis of online discussion forums: A comparative analysis of protocols', *Educational Technology Research and Development,* 52 (2), pp.23-40.

Martin, D. (2005) 'Communities of Practice and Learning Communities: do bilingual workers learn in community?', in Barton, D. & Tusting, K. (Eds.), Beyond communities of practice: Language, power and social context. pp.139-157, Cambridge, Cambridge University Press.

Martinez, M. E. (2006) 'What is metacognition?', *Phi Delta Kappan*, 87 (9), p.696, [online], http://www.gse.uci.edu/person/martinez_m/docs/mmartinez_metacognition.pdf (Accessed 10.08.2011).

Mcclenaghan, P. (2000) 'Social Capital: Exploring the theoretical foundations of community development education', *British Educational Research Journal,* 26 (5), pp.565-582.

Mcconnell, D. (2006) *E-Learning Groups and Communities*. Maidenhead, Open University Press.

Mckerlich, R., Riis, M., Anderson, T. & Eastman, B. (2011) 'Student Perceptions of Teaching Presence, Social Presence and Cognitive Presence in a Virtual World', *MERLOT Journal of Online Learning and Teaching*, 7 (3), [online], http://jolt.merlot.org/vol7no3/mckerlich_0911.pdf (Accessed 20.09.2011).

Mcmillan, D. W. & Chavis, D. M. (1986) 'Sense of community: A definition and theory', *Journal of community psychology,* 14 (1), pp.6-23.

Meyer, K. (2004) 'Evaluating online discussions: Four different frames of analysis', *Educational Leadership,* 8 (2), pp.101-114.

Meyer, K. (2006) 'The method (and madness) of evaluating online discussions', *Journal of Asynchronous Learning Networks,* 10 (4), pp.83-97.

Meyer, K. A. (2003) 'Face-to-face versus threaded discussions: The role of time and higher-order thinking', *Journal of Asynchronous Learning Networks,* 7 (3), pp.55-65.

Moisey, S., Neu, C. & Cleveland-Innes, M. (2008) 'Community Building and Computer-Mediated Conferencing', *Journal of Distance Education,* 22 (2), pp.15-42.

Mooney, C. G. (2000) *Theories of childhood: an introduction to Dewey, Montessori, Erikson, Piaget and Vygotsky*. St. Paul, MN, Redleaf Press.

Murphy, E. & Ciszewska-Carr, J. (2005) 'Identifying Sources of Difference in Reliability in Content Analysis', *The International Review of Research in Open and Distance Learning,* 6

Nahapiet, J. & Ghoshal, S. (1998) 'Social Capital, Intellectual Capital, and the Organizational Advantage', *The Academy of Management Review,* 23 (2), pp.242-266.

O'connor, M. C. (1998) 'Chapter 2: Can We Trace the "Efficacy of Social Constructivism"?', *Review of Research in Education,* 23 (1), pp.25-71.

Oecd (2008) *Innovating to learn, learning to innovate,* OECD. [online], http://www.oecd.org/document/7/0,3343,en_2649_35845581_41656455_1_1_1_37455,00.html (Accessed 17.03.2010).

Oliver, M. & Trigwell, K. (2005) 'Can 'Blended Learning' Be Redeemed?', *E-Learning and Digital Media,* 2 (1), pp.17-26.

Oppenheim, A. N. (1992) *Questionnaire design, interviewing and attitude measurement,* 2nd ed., London, Pinter Pub Ltd.

Ottenbreit-Leftwich, A. T., Glazewski, K. D., Newby, T. J. & Ertmer, P. A. (2010) 'Teacher value beliefs associated with using technology: Addressing

professional and student needs', *Computers & Education,* 55 (3), pp.1321-1335.

Palloff, M. & Pratt, K. (2007) 'Online Learning Communities in Perspective', in Luppicini, R. (Ed.), Online Learning Communities. Perspectives in Instructional Technology and Distance Education. pp.3-15, Charlotte, Information Age.

Palloff, R. M. & Pratt, K. (1999) *Building learning communities in cyberspace*, Jossey-Bass Publishers San Francisco.

Pascu, C. (2008) *An Empirical Analysis of the Creation, Use and Adoption of Social Computing Applications,* Seville, Institute for Prospective Technological Studies (IPTS), JRC, European Commission. [online], http://ftp.jrc.es/EURdoc/JRC46431.pdf (Accessed 16.09.2009).

Pawan, F., Paulus, T., Yalcin, S. & Chang, C. (2003) 'Online Learning: Patterns of Engagement and Interaction among In-Service Teachers', *Language, Learning & Technology,* 7 (3), pp.119-140.

Pedler, M. (1981) 'Chapter 5: Developing the learning community', in Boydell, T. & Pedler, M. (Eds.), Management Self-development: Concepts and Practices pp.68-84, Aldershot, Gower Publishing Company Ltd.

Perry, B. & Edwards, M. (2005) 'Exemplary Online Educators: Creating a Community of Inquiry', *Online Submission, Turkish Online Journal of Distance Education*, 6 (2), p.10, [online], http://eric.ed.gov/PDFS/ED490370.pdf (Accessed 12.01.2012).

Persico, D., Pozzi, F. & Sarti, L. (2010) 'Monitoring collaborative activities in computer supported collaborative learning', *Distance Education,* 31 (1), pp.5 - 22.

Preece, J. & Maloney-Krichmar, D. (2003) 'Online communities: focusing on sociability and usability', *Handbook of human-computer interaction*, pp.596–620.

Redecker, C., Ala-Mutka, K., Bacigalupo, M., Ferrari, A. & Punie, Y. (2009) *Learning 2.0: the impact of Web 2.0 innovations on education and training in Europe*, Institute for Prospective Technological Studies (IPTS), JRC, European Commission [online],

http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=2899 (Accessed 11.01.2009).

Reynolds, M. & Trehan, K. (2003) 'Learning from Difference?', *Management Learning,* 34 (2), pp.163-180.

Rheingold, H. (2000) *The virtual community: Homesteading on the electronic frontier*, The MIT Press [online], http://www.rheingold.com/vc/book/ (Accessed 27.12.11).

Richardson, J. C. & Swan, K. (2003) 'Examining social presence in online courses in relation to students' perceived learning and satisfaction', *Journal of Asynchronous Learning Networks,* 7 (1), pp.68-88.

Riel, M. & Polin, L. (2004) 'Online learning communities: Common ground and critical differences in designing technical environments', in Barab, S., Kling, R. & Gray, B. (Eds.), Designing for virtual communities in the service of learning. pp.16-50, Cambridge, Cambridge University Press.

Riverin, S. & Stacey, E. (2008) 'Sustaining an Online Community of Practice: a Case Study', *Journal of Distance Education,* 22 (2), pp.43-58.

Roulston, K. (2010) *Reflective Interviewing: A Guide to Theory and Practice*. London, Sage Publications Ltd.

Rourke, L., Anderson, T., Garrison, D. & Archer, W. (2001a) 'Assessing Social Presence in Asynchronous Text-based Computer Conferencing', *Journal of Distance Education,* 14 (2), pp.50-71.

Rourke, L., Anderson, T., Garrison, D. & Archer, W. (2001b) 'Methodological issues in the content analysis of computer conference transcripts', *International Journal of Artificial Intelligence in Education (IJAIED)*, 12, pp.8-22, [online], http://hal.archives-ouvertes.fr/hal-00197319/ (Accessed 18.07.2010).

Rourke, L. & Kanuka, H. (2009) 'Learning in Communities of Inquiry: A Review of the Literature', *Journal of Distance Education*, 23:1, pp.19-48, [online], http://www.jofde.ca/index.php/jde/article/view/474/816 (Accessed 14.06.2009).

Rovai, A. P. (2002) 'Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks', *The Internet and Higher Education,* 5 (4), pp.319-332.

Ryberg, T. & Larsen, M. (2008) 'Networked Identities–Understanding Relations between Strong and Weak Ties in Networked Environments', *Journal of Computer Assisted Learning,* 24 (2), pp.103-115.

Salmon, G. (2000) *E-moderating: The key to teaching and learning online*. London, Kogan Page.

Sarisalmi, T. (2010a) *Exploiting web2.0 - eTwinning and collaboration (the first Learning Event)*, 12 - 24 April 2010, for the eTwinning Central Support Service.

Sarisalmi, T. (2010b) *Exploiting web2.0 - eTwinning and collaboration (the second Learning Event)*, 25 October - 27 November 2010, for the eTwinning Central Support Service.

Schön, D. A. (1987) *Educating the reflective practitioner*. San Francisco, Jossey-Bass.

Schrire, S. (2004) 'Interaction and cognition in asynchronous computer conferencing', *Instructional Science,* 32 (6), pp.475-502.

Seddon, K. & Postlethwaite, K. (2007) 'Creating and testing a model for tutors and participants to support the collaborative construction of knowledge online', *Technology, Pedagogy and Education,* 16 (2), pp.177 - 198.

Selinger, M. (1998) 'Forming a critical community through telematics', *Computers & Education,* 30 (1/2), pp.23-30.

Shea, P. (2006) 'A study of students' sense of learning community in online environments', *Journal of Asynchronous Learning Networks,* 10 (1), pp.35-44.

Shea, P. & Bidjerano, T. (2009) 'Community of inquiry as a theoretical framework to foster ''epistemic engagement" and ''cognitive presence" in online education', *Computers & Education,* 52, pp.543-553.

Shea, P., Hayes, S., Vickers, J., Gozza-Cohen, M., Uzuner, S., Mehta, R., Valchova, A. & Rangan, P. (2010) 'A re-examination of the community of inquiry framework: Social network and content analysis', *The Internet and Higher Education,* 13 (1-2), pp.10-21.

Shea, P., Sau Li, C. & Pickett, A. (2006) 'A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses', *The Internet and Higher Education,* 9 (3), pp.175-190.

Shulman, L. S. (1987) 'Knowledge and teaching: Foundations of the new reform', *Harvard educational review,* 57 (1), pp.1-23.

Silverman, D. (2006) *Interpreting qualitative data: Methods for analyzing talk, text, and interaction,* 3rd ed., London, Sage Publications Ltd.

Simons, H. (1996) 'The paradox of case study', *Cambridge Journal of Education*, 26 (2), pp.225-241, Routledge [online], http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=9608071782&site=ehost-live (Accessed 15.01.2012).

Simpson, A. (2010) 'Integrating technology with literacy: using teacher-guided collaborative online learning to encourage critical thinking', *ALT-J: Research in Learning Technology,* 18 (2), pp.119-131.

Stahl, G. (2003), 'Meaning and interpretation in collaboration', *Proceedings of the international conference on computer support for collaborative learning (CSCL'03)*, pp.523-532 [online], http://www.cs.colorado.edu/~gerry/cscl/papers/ch20.pdf (Accessed 30.11.2008).

Stahl, G. (2005) 'Group cognition in computer-assisted collaborative learning', *Journal of Computer Assisted Learning,* 21 (2), pp.79-90.

Stoll, L. & Louis, K. S. (2007) *Professional learning communities: Divergence, depth and dilemmas*. Maidenhead, Open University Press.

Stoll, L., Robertson, J., Butler-Kisber, L., Sklar, S. & Whittingham, T. (2007) 'Beyond borders: can international networks deepen professional learning community?', Professional learning communities: Divergence, depth and dilemmas. pp.63-76, Maidenhead, Open University Press.

Sugrue, C. (2004) 'Rhetorics and realities of CPD across Europe: from cacophony towards coherence', in Day, C. & Sachs, J. (Eds.), International handbook on the continuing professional development of teachers. pp.67-93, Maidenhead, Open University Press.

Swan, K., Richardson, J., Ice, P., Garrison, D., Cleveland-Innes, M. & Arbaugh, J. (2008) 'Validating a measurement tool of presence in online communities of inquiry', *eMentor*, 2 (24), pp.1-12, [online], http://www.e-mentor.edu.pl/_xml/wydania/24/543.pdf (Accessed 06.03.2010).

Swan, K. & Shih, L. F. (2005) 'On the nature and development of social presence in online course discussions', *Journal of Asynchronous Learning Networks,* 9 (3), pp.115-136.

Szabo, Z. & Schwartz, J. (2011) 'Learning methods for teacher education: the use of online discussions to improve critical thinking', *Technology, Pedagogy and Education,* 20 (1), pp.79 - 94.

Theodori, G. L. (2005) 'Community and Community Development in Resource-Based Areas: Operational Definitions Rooted in an Interactional Perspective', *Society & Natural Resources,* 18 (7), pp.661-669.

Thomas, B., Jones, P., Packham, G. & Miller, C. (2004), 'Student perceptions of Effective E-moderation: a qualitative investigation of E-College Wales', *Networked Learning 2004,* Lancaster University, pp.512-519 [online], http://www.networkedlearningconference.org.uk/past/nlc2004/proceedings/Individual_Papers/Thomas_et_al.htm (Accessed 05.04.2012).

Tu, C.-H. & Corry, M. (2001) 'A paradigm shift for online community research', *Distance Education,* 22 (2), pp.245 - 263.

Vescio, V., Ross, D. & Adams, A. (2008) 'A review of research on the impact of professional learning communities on teaching practice and student learning', *Teaching and Teacher Education,* 24 (1), pp.80-91.

Vlachopoulos, P. & Cowan, J. (2010) 'Reconceptualising moderation in asynchronous online discussions using grounded theory', *Distance Education,* 31 (1), pp.23 - 36.

Vlachopoulos, P. & Mcaleese, R. (2004), 'E-moderating in on-line problem solving: a new role for teachers?', *4th Hellenic Conference with International Participation, Information and Communication Technologies in Education,* Athens, University of Athens [online] http://www.epyna.gr/show/a399_406.pdf (Accessed 15.08.2010).

Volet, S. & Wosnitza, M. (2004) 'Social Affordances and Students' Engagement in Cross-National Online Learning: An Exploratory Study', *Journal of Research in International Education,* 3 (1), pp.5-29.

Vratulis, V. & Dobson, T. M. (2008) 'Social negotiations in a wiki environment: a case study with pre-service teachers', *Educational Media International,* 45 (4), pp.285 - 294.

Vuorikari, R. (2009) Tags and self-organisation: a metadata ecology for learning resources in a multilingual context. *Centre for Learning Sciences and Technologies.* Heerlen, Open Universiteit Nederland.

Vygotsky, L. (1978) *Mind in society*. Cambridge, MA, Harvard University Press.

Wellman, B., Quan-Haase, A., Boase, J., Chen, W., Hampton, K., Díaz, I. & Miyata, K. (2003) 'The Social Affordances of the Internet for Networked Individualism', *Journal of Computer-Mediated Communication,* 8 (3), p.0.

Wenger, E. (1999a) *Communities of Practice: Learning, Meaning, and Identity*. Cambridge, Cambridge University Press.

Wenger, E. (1999b) 'Learning as Social Participation', *Knowledge Management Review,* 6, pp.30-33.

Wenger, E., White, N. & Smith, J. (2009) *Digital Habitats; Stewarding Technology for Communities*, CPsquare.

Wilson, S. M. & Leighton, C. P. (2002) 'The Anthropology of Online Communities', *Annual Review of Anthropology,* 31, pp.449-467.

Wubbels, T. (2007) 'Do we know a community of practice when we see one?', *Technology, Pedagogy and Education,* 16 (2), pp.225 - 233.

Yin, R. K. (2009) *Case study research: Design and methods,* 4th ed., Thousand Oaks, CA, Sage Publications, Inc.

Zenios, M. & Holmes, B. (2010), 'Knowledge creation in networked learning: combined tools and affordances', *Proceedings of the 7th International Conference on Networked Learning 2010,* Copenhagen, pp.471-479 [online], http://www.lancs.ac.uk/fss/organisations/netlc/past/nlc2010/abstracts/Zenios.html (Accessed 24.06.2010).