

# Chapter 10

## Online Learning Communities for Teachers’ Continuous Professional Development: An Action Research Study of eTwinning Learning Events

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### Introduction

Online communities are increasingly being used in formal education to augment collaboration between students, and between students and tutors, in networked learning (Luppacini, 2007; McConnell, 2006). Whereas a reasonable body of research exists on the use of networked learning and learning communities in higher education, especially in postgraduate studies, less is known about their use in other sectors of education, such as continuous vocational education and training.

In the area of teachers’ continuous professional development (CPD), learning communities are seen as offering valuable opportunities for authentic and personalised learning (Duncan-Howell, 2010), and informal exchange of good practice and peer learning (Avalos, 2011). Rather than separating the formal knowledge and theory for 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 & Lytle, 1999; Vescio, Ross, & Adams, 2008). Guskey (2002, p. 382) posits that teachers prefer CPD that offers ‘specific, concrete and practical ideas that directly relate to the day-to-day operation of their classrooms’ and studies suggest that change happens when teachers believe in the pedagogical value of what they are learning, after seeing for themselves the positive effect on their pupils’ learning (Ertmer, 2005; Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010). Yet Boyle, While, and

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Boyle (2004) note that attending an out-of-school training course is still the predominant mechanism for teachers' CPD.

This action research study looks at an example of teachers' CPD that offers teachers the opportunity to undertake inquiry-based learning informally with peers, in an online learning community and in the context of their everyday teaching practice—an eTwinning Learning Event (Holmes, 2012). Using the Community of Inquiry (CoI) Framework to examine the online learning community, it particularly investigates how the online community supports the development of teachers' competence in online collaboration and how social aspects contribute to this discourse. Moreover, the research looks at the impact of facilitation and how it influences critical thinking and meta-cognition.

The research addresses, specifically, online learning communities rather than other types of community such as Communities of Practice or Communities of Interest. Whereas these communities all share some common characteristics and can each contribute to teachers' CPD, the focus of online learning communities on individual learning in the context of a group has important consequences for the nature of the community, cognitive development and learner orchestration (Eraut, 2002; McConnell, 2006; Riel & Polin, 2004). The development of critical thinking and meta-cognition is seen as essential for deep and meaningful understanding (Garrison, Anderson, & Archer, 2001), knowledge development (Garrison, 1991) and the improvement of professional practice (Eraut, 1994).

This chapter begins with a discussion of different types of online communities and the educational experience they offer to participants. This is important to clarify and to take into account when considering the outcomes of this research. This is followed by a discussion of existing research on the CoI framework as it reflects the theoretical assumptions and concepts used in this research and the interrelations between them (Garrison, Anderson, & Archer, 2000). The context of eTwinning Learning Events is described and the methodology of action research explained before the findings of two action research cycles are presented. Finally, there is a discussion and a conclusion that offers an emerging model for designers and facilitators to use to enhance future educational experiences in online learning communities.

## Online Learning Communities

A social revolution is taking place in the way information is shared and knowledge is constructed over the Internet (Castells, 2000). Social networking technologies are encouraging interaction, online collaboration and the development of relationships. They are facilitating the use of more social constructivist approaches in distance learning (Anderson & Dron, 2011) and there is a renewed interest by educationalists in the social concept of a 'community' to support groups of learners to collaborate, critically reflect and develop shared meaning with peers online (Ala-Mutka, 2010; OECD, 2008).

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 (Barab, MaKinster, & Scheckler, 2003). It involves shared experience and knowledge building with a clear focus on practice and collaboration. Moreover, a community offers sufficient shared interest and value that the participants are motivated to interact and return (Leask & Younie, 1999).

The concept of an online community for learning is not without its critics. Grossman, Wineburg, and Woolworth (2000, p. 6) argue that the term *community* is 'an obligatory appendage to every educational innovation' and McConnell (2006, p. 21) cautions that it is 'currently being applied in too many educational contexts with little apparent understanding of what it might, or should, mean'. Fox (2005) wonders whether it is simply a prevailing feeling of nostalgia for the strong, tight communities of the past. Whereas Hodgson and Reynolds (2005) suggest that we are seeing a reaction to a previously exaggerated emphasis on individual autonomy and the social fragmentation that this may bring. Ryberg and Larsen (2008, p. 105) criticise research for distinguishing between the 'real' and the 'virtual' worlds and for treating communities as 'exotic islands and bounded social spaces'; instead they propose the *network* as a better metaphor for social forms of online learning.

Networked learning is seen by some scholars as an alternative approach to learning with technology that embraces network individualism and the multitude of learning resources, opportunities and relationships available via the Internet (Goodyear, Banks, Hodgson, & McConnell, 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, p. 12), emphasising instead the value of weak as well as strong ties (Ryberg & Larsen, 2008).

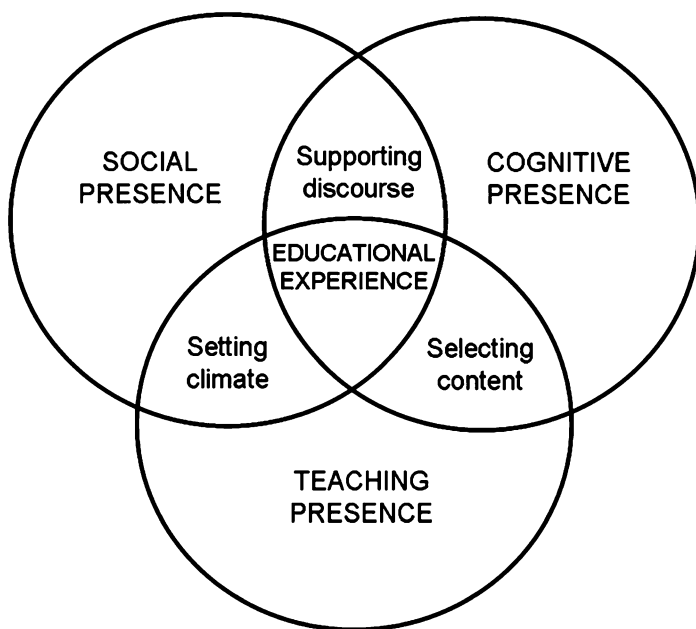
Despite the rhetoric, the vision put forward in networked learning is not at odds with that of online learning communities. On the contrary, networked learning embraces both individual and group learning in the context of multiple communities that embrace and value difference. Communities are thus part 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 an overemphasis on collaboration and consensus (Ferreday & Hodgson, 2009). This in turn implies careful design, organisation and facilitation of the educational experience.

Having discussed the concept of an online learning community, the next section discusses the CoI framework (Garrison et al., 2000) that is used to explore the online learning community.

## Community of Inquiry Framework

The CoI framework offers a holistic approach to analysing the use of computer-mediated communication for educational purposes (Garrison et al., 2000). Originally devised for higher education, it has ‘been adopted and adapted by hundreds of scholars working throughout the world’ (Garrison, Anderson, & Archer, 2010, p. 5), cited in more than 1,500 scholarly papers (Google Scholar as of November 2012) and validated in a number of studies (Arbaugh et al., 2008; Garrison & Arbaugh, 2007). The model’s 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 Fig. 10.1).

Cognitive presence is defined as ‘the extent to which the participants in any particular configuration of a CoI are able to construct meaning through sustained communication’ (Garrison & Arbaugh, 2007, p. 89) and is seen as vital to critical thinking and meta-cognition (Akyol & Garrison, 2011). It is at the heart of the learning process and is perhaps the most difficult presence to achieve (Arbaugh, 2007). Indeed, interaction within an online community may be good for group cohesion, but it is no guarantee of purposeful and systemic discourse (Garrison & Cleveland-Innes, 2005).



**Fig. 10.1** The Community of Inquiry framework (Garrison et al., 2000, p. 88)

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). Referring to the work of Laurillard, Stratford, Luckin, Plowman, and Taylor (2000), Anderson, Rourke, Garrison, and Archer (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, Sau Li, and Pickett (2006) suggests that teaching presence can reinforce the sense of community perceived by learners.

Social presence is defined as 'the ability of participants in a CoI 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). It 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 (Chen, 2007; Daniel, Schwier, & McCalla, 2003; Gannon-Leary & Fontainha, 2007; Gray, 2004a; Levy, 2003; McConnell, 2006; Moisey, Neu, & Cleveland-Innes, 2008; Tu & Corry, 2001).

Whereas most of the research conducted thus far using this framework has focused on one particular presence 'rather than on the nature of the relationship between the types of presence' (Garrison & Arbaugh, 2007, p. 167) and mainly with the use of quantitative data analysis, the research discussed here addresses all three elements in equal measure and applies both quantitative and qualitative analysis to a study of CPD.

## Research Context and Methodology

The research is conducted in the context of the European Commission's eTwinning initiative, funded under the Comenius sub-programme of the Lifelong Learning Programme (LLP).<sup>1</sup> eTwinning started in 2004 to encourage school teachers to work together informally across Europe in joint pedagogical projects using the Internet (Gillera, 2007). So far, there have been approximately 98,000 schools and 184,000 users (mainly teachers) registered in eTwinning, with 26,000 registered projects.<sup>2</sup> Teachers involved in eTwinning teach a range of subjects at primary and secondary school level in both general and vocational education to pupils between the ages of 4 and 19. A Central Support Service maintains the multilingual eTwinning portal,<sup>3</sup> provides a helpdesk for school teachers and periodically organises events, both

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<sup>1</sup> [http://eacea.ec.europa.eu/llp/comenius/comenius\\_etwinning\\_en.php](http://eacea.ec.europa.eu/llp/comenius/comenius_etwinning_en.php).

<sup>2</sup> As of November 2012: [http://www.etwinning.net/en/pub/news/press\\_corner/statistics.cfm](http://www.etwinning.net/en/pub/news/press_corner/statistics.cfm).

<sup>3</sup> <http://www.etwinning.net>.

online and face-to-face. It 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 & Younie, 2001).

Within the eTwinning initiative, Learning Events (LEs) are short-duration, non-formal learning opportunities for teachers to work together on a particular theme supported by a domain expert or tutor, typically a fellow eTwinning teacher. Satisfaction surveys conducted on the LEs and the eTwinning groups (eTwinning, 2009, p. 56) clearly indicated the success of the initiatives and provided a taste of what school teachers felt: 'Providing online training at a central level this school year through the LEs has responded perfectly to the need for further professional development opportunities'. However, they did not reveal details of what had happened and why. Hence, it was decided that more research was needed to understand practical aspects of design and facilitation, such as the role of the tutor, the influence of the LEs' duration on the development of the community and the extent to which the LEs are supporting competence development.

Action research was chosen as the most appropriate methodology, as it involves close collaboration between researcher and practitioners, with an emphasis on promoting change during the research process (Budd, Thorp, and Donohue, 1967, cited in Gray, 2004b) rather than as an afterthought in the research conclusions (Denscombe, 2007). The research was conducted with the tutor, Tiina, a school teacher from Finland, who organised and led the events. Staff of the eTwinning CSS (EUN) was also closely involved and helped to decide on the direction of the research. Action research was used to follow and influence the development of an online LE entitled 'Exploiting Web 2.0: eTwinning and Collaboration'.

An important feature of action research is that it involves cycles, or iterations towards a solution, that involve planning, action, observation and reflection leading to outcomes that transform both theory and practice. This chapter discusses the findings of two LEs, or cycles of action research.

Details of participants and methods used to gather data are described within each LE, below, as they are not the same in each cycle. Online questionnaires, interviews, forum participation logs and forum posts were used to collect data. Analysis of data involved both qualitative and quantitative methods. Qualitative analysis used the concepts and coding schemes of the CoI framework that have been widely used and validated in a number of previous studies (Arbaugh et al., 2008; Garrison & Arbaugh, 2007).

As is appropriate in an action research study, the research questions developed over time, with the support of the EUN staff and the tutor, into the following.

In an eTwinning Learning Event (LE) for school teachers' CPD:

- 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?

## ***The First Learning Event***

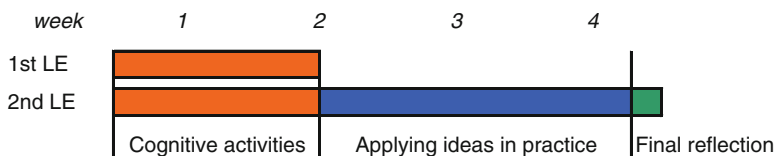
The first LE took place over a period of 11 days. Participants were 91 % female, representing 25 nationalities, and while only 3 % were native English speakers using English was not considered a problem (77 %). Fifty-three percent considered themselves experienced participants of eTwinning LEs. Data were collected through a final online questionnaire and analysed manually using the CoI framework as a theoretical lens. The response rate was high, with 82 % of the 156 teachers offering their opinion. Analysis of the questionnaire data revealed a high level of satisfaction with the event (98 %). Here, we briefly discuss the findings focusing on those that led to changes in the second LE; full details of the findings can be read in Holmes (2012).

The first research question considers how the online learning community influences the development of teachers' cognition, practice and competence. The feeling of connectedness was reported to be the same or higher than elsewhere in eTwinning (76 %), with 61 % indicating that the profile pages helped increase immediacy and intimacy (Gunawardena & Zittle, 1997) between participants. There was evidence that the teachers started to see the benefits of collaboration, with 47 % indicating a preference for collaboration and 17 % for learning alone. Several commented on the advantages of combining individual learning with group reflection and sense-making (Stahl, 2003). The teachers also had initial exposure to the challenges of online group dynamics, reciprocation and the role of moderators. While collaboration was seen to be beneficial, when successful some groups faced challenges in self-organising.

Most teachers reported increased confidence and competence in the use of Web 2.0 tools for collaboration (87 %); however, few participants expressed confidence in their ability to manage online groups of students. The results suggested that more personal experience was needed before the teachers would be comfortable in changing their own teaching practice; 'I wish I had more time to experiment more with the tools and communicate and collaborate in online groups' (anonymous, final questionnaire). As Guskey (2002) suggests, activities that are not grounded in everyday teaching practice may be less successful in changing teachers' practice.

Although there was a stronger sense of connectedness, only 27 % reported seeing the community develop as opposed to seeing relationships develop between individuals (43 %). Participants' attention appeared to be focused on the cognitive activities (67 %) with little time for the socio-emotional issues (11 %) that studies suggest can encourage collaboration and foster a community (Kreijns, Kirschner, & Jochems, 2003; Volet & Wosnitza, 2004; Zenios & Holmes, 2010). As a result there was not enough data to answer the second research question on how teaching presence and social presence influence the collaboration, the cognitive presence and the development of community.

The findings were discussed with both the LE tutor and the organisers of the LE activities, in order to agree changes that could enhance critical-thinking and



**Fig. 10.2** Timing of the second LE compared with the first LE

competence development, increase socialisation and foster the community in the second LE. Three suggestions were made, and subsequently implemented in the second LE. It was suggested that cognitive presence could be reinforced by including explicit time for the teachers to try out the tools in their school and by adding a final activity for sharing stories and reflection amongst peers (see Fig. 10.2). Collaboration and critical thinking could be fostered through an increased teaching presence, with the tutor and the researcher orchestrating activities at key points (Dillenbourg, 2008) and encouraging mutual support. Social presence could be strengthened through the creation of a permanent, specific space for informal discussion in small groups—a virtual staff room.

### *The Second Learning Event*

The second LE took place over 34 days with 142 teachers of 18 nationalities, including 4 % native English speakers. Forty-three percent considered themselves experienced participants of eTwinning and one teacher had also participated in the first LE. Data were once more collected using a final questionnaire with a 58 % response rate. Further data were collected via interviews of selected participants and from the messages in the discussions forums. The coding schemes of the CoI framework were used to analyse the latter, from the point of view of cognitive presence (Garrison et al., 2001), social presence (Rourke, Anderson, Garrison, & Archer, 2001) and teaching presence (Anderson et al., 2001). The results from the three sources were compared and analysed in order to reach conclusions as to the effect of the changes implemented.

The analysis of the results suggests that changes made to the event, specifically the addition of an opportunity to try out ideas in practice and then share reflections with others, had a positive effect on cognitive presence. Participants' comments in the final questionnaire and interviews indicate that those who had been able to apply what they had learned in their teaching practice had benefited from the experience. Several participants indicated that they felt more confident and competent about the use of Web 2.0 tools in their teaching practice (89 %) and for online collaboration with pupils (83 %):

I was able to apply what I learned in the classroom and my pupils are very excited and they want to learn more (Roberta, female primary school teacher from Rumania).



**Table 10.1** Phases of critical inquiry for cognitive presence (Garrison et al., 2001)

Phases of critical inquiry	Description	Example indicators	Socio-cognitive processes
Triggering event	Initial phase, issues and problems emerge	Sense of puzzlement	Asking questions
Exploration	Linking private thoughts to real world, as ideas are explored	Leaps to conclusions	Adds to established points but does not systematically defend/justify/develop addition
Integration	Constructing meaning, moving between reflection and discourse	Connecting ideas, synthesis	Integrating information from various sources—textbook, articles, personal experience
Resolution	Direct or vicarious action as solutions are implemented and assessed	Testing solutions	Evaluating results

In the final reflection activity, the participants had been asked to give an example of what they had done, what impact it had on their teaching practice and what recommendations they would pass to their colleagues. The analysis suggests that this was beneficial for critical thinking and meta-cognition, see Table 10.1. The CoI framework codes cognitive presence into four phases of critical inquiry (Garrison et al., 2001) and associates critical thinking with two of the four phases: integration and resolution. Most of the messages coded at these two levels were in the final reflection activity.

Participants who identified themselves as experienced 'eTwinners' (43 %) were compared with those with little or no experience. The progression from lower levels of cognition to higher levels was evident in the coded messages for participants with little or no previous experience of online collaboration. Figure 10.3 illustrates a typical example, with all posted messages against time for Lenuta, a female teacher of English from Romania. Lenuta stayed at the lower levels of cognition for most of the initial activities, with many messages showing no cognitive presence at all (56 %) or at the triggering event level (28 %). However, she demonstrated critical thinking during the final reflection activity (messages 30–32) with messages at the integration and resolution levels.

Data from interviews revealed that some participants did not feel confident or experienced enough to contribute to the final reflection activity; however, they mentioned how they had learned from having read the contributions of others (lurking). Overall, the reflection activity was useful for reflecting on experience, sharing knowledge and thinking about the wider consequences (meta-cognition).

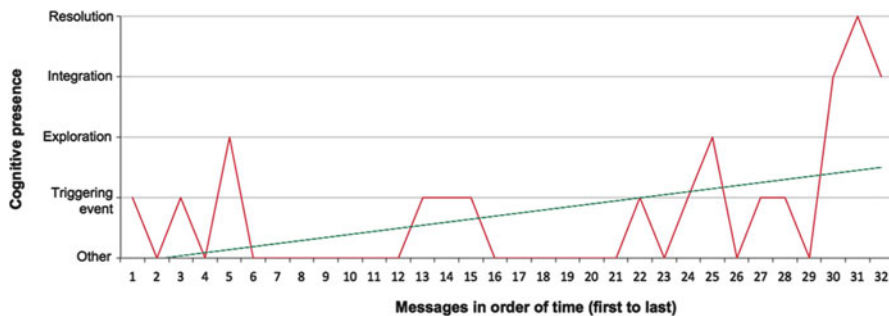


Fig. 10.3 Results of coding cognitive presence for the participant Lenuta

The analysis of the staff room forum suggests that the intervention of the tutors at key points had a positive impact on the discourse. Figure 10.4 shows the number of messages posted each day in the staff room over time. It shows that the messages posted by the participants in the early stages of the LE closely followed those posted by the tutors; however, this was not the case in the later stages when participants exhibited greater self-organisation and autonomy. At this stage the teaching presence was largely derived from the participants themselves supporting one another indicating that it is possible for tutors to step back and allow participants to take more control.

The staff room, where 48 % messages were posted, was seen as a valuable, stable place for reflection, for sharing emotions and for checking on the team's progress:

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 of German, from Italy).

Participants indicated that there was a community feeling in the staff room and that it helped to foster social interaction which they perceived as beneficial to their learning. This is in line with Shea and Bidjerano (2009) who found a positive influence of social presence on cognitive presence. These relationships became stronger over time, as the community developed:

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 of English, from Poland).

When collaboration was not successful, participants perceived the staff room and the need to interact with others as an additional burden that had little value. Analysis of the messages suggested that when collaboration was less successful it was often associated with a lack of teaching presence or a more directive and formal style of communication as one participant showed.

The social activities in the staff room were initiated by cognitive activities organised by tutors. In other words, the teaching presence was instrumental in

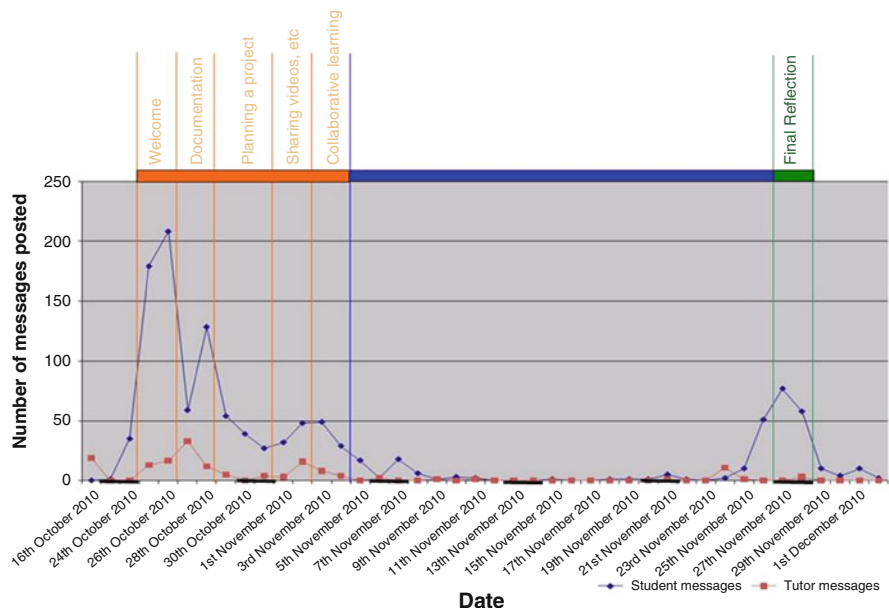


Fig. 10.4 Number of messages posted each day in the staff room over time

fostering effective social and cognitive presence (Rourke et al., 2001; Swan & Shih, 2005). Although interaction contained a strong social element it remained purposeful and primarily focused on learning, as Fig. 10.4 illustrates, there were very few messages posted during the period allotted for practice and interaction died off quickly once the final reflection activity was completed.

## Discussion

Overall the research illustrates how an online learning community can support the development of school teachers' competence by providing opportunities for CPD that support critical inquiry with peers in the context of everyday teaching practice. The LE activities encourage an epistemology of practice (Eraut, 1994) with teachers expressing their understanding of what they are learning, and developing that understanding over time.

The findings from both LEs suggest that the cognitive activities provided an opportunity for school teachers to develop their technical skills and knowledge-for-practice (Cochran-Smith & Lytle, 1999). Evidence from the second LE supports the argument that it is also important for school teachers to have the opportunity to apply 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 the application of ideas in practice encouraged reflection-in-practice (Eraut, 1995) in the online discourse with peers. Moreover, the results from the final reflection activity of the second LE suggest that school teachers who are unable to try out ideas directly for themselves may still learn vicariously (Ertmer, 2005; Lave & Wenger, 1991) by collaborating and reflecting with others in the community. 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 were motivated to continue learning (Boyle et al., 2004; Guskey, 2002; 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 (Akyol & Garrison, 2011; Garrison et al., 2001; Garrison & Cleveland-Innes, 2005; Groundwater-Smith & Dadds, 2004). It offers empirical evidence as to the value for school teachers of reflecting on their practice (Akbari, 2007) with peers, fostering meta-cognition and connections to the wider social, cultural and political issues associated with teaching, thereby developing the meta knowledge-*of*-practice (Cochran-Smith & 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 & Dobson, 2008)—the second LE was extended from 11 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 school teachers are often 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 LE appeared to be 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 benefitted from collaborating with peers who were more experienced and who shared their knowledge. In return, the experienced participants supported and guided their peers.

The research supports the view that online collaboration and discourse, cognitive development and sense of community are significantly influenced by the teaching presence (Garrison et al., 2000; Shea et al., 2006; Shea & Bidjerano, 2009; Swan & Shih, 2005). 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 (Anderson et al., 2001; Boud & Walker, 1998; Garrison et al., 2001; Kanuka, Rourke, & Laflamme, 2007; McConnell, 2006), 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 (Hlapanis & Dimitracopoulou, 2007; Salmon, 2000). The tutor needs to find an appropriate balance between structure

and guidance on the one hand, and flexibility and autonomy on the other (Vlachopoulos & Cowan, 2010). Thomas, Jones, Packham, and Miller (2004) suggest 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. Moreover, without appropriate teaching presence, the results confirm that participants tend to stay at the lower levels of critical thinking as seen in the coding of cognitive presence (Angeli, Valanides, & Bonk, 2003; Pawan, Paulus, Yalcin, & Chang, 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 was engendered in the LE by the social affordances of the environment (Conole & Dyke, 2004; Kreijns, Kirschner, & Jochems, 2002), such as the online discussion forums and participant profile pages. However, as the results of the second LE suggest, just as important was the inclusion of time, space and activities specifically dedicated to social interaction and building social presence (Kreijns et al., 2003; Swan & 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 & Postlethwaite, 2007), to provide the necessary 'grounding' for group work (Stahl, 2005) and to foster a sense of community (McMillan & Chavis, 1986).

The research supports the view that cognitive presence, teaching presence and social presence are interrelated and interdependent in an online learning community (Garrison, Cleveland-Innes, & Fung, 2010), and a careful balance of all three is required to ensure a purposeful and effective educational experience for its participants. Social interaction was important; however, the community was primarily focused on achieving the learning activities (Lockhorst, Admiraal, & Pilot, 2010) and was therefore ephemeral, being active only for as long as it served the purpose of learning (Garrison & Arbaugh, 2007; Riel & Polin, 2004).

The reliability and validity of these findings should be considered. The reliability of qualitative interviews can be criticised as potentially offering inaccurate accounts of experience that can be biased by the researcher's interpretation. However, interviews do allow participants to offer their own reflections and allow researchers to gain insight into their perceptions, attitudes and values (Silverman, 2006). In this study, the participants clearly appreciated the opportunity to do so. Reliability in the questionnaires was ensured by pilot testing and in the interviews was ensured by having a common structure with predetermined questions. The qualitative analysis was carried out by a single researcher, and then the findings were checked against the notes made by the tutor Tiina. There were no issues with inter-rater reliability.

Validity was ensured by several means. A mixed methods approach was used to triangulate, or cross reference the data. The interview data was supplemented by analysis of questionnaire data and observational data in the form of forum posts and activity logs. The action research methodology enabled a flexible and reflexive approach whereby emerging findings influenced future actions.

The tutor Tiina acted as a critical friend and regular reflexive discussions were held. For example, when it was realised that there was confusion with the term 'competence', a supplementary questionnaire was issued. Finally, the qualitative data was analysed using the previously validated coding schemes of the CoI framework. Their validation and use in many publications provides some confidence in their reliability (Garrison et al., 2010) and facilitates comparison and generalisation of results.

The CoI model helped to ensure that the results were analysed both holistically and from the point of view of cognitive, social and teaching aspects. Applying the CoI coding schemes was straightforward for the coding of cognitive presence, revealing interesting insights into the change in critical thinking over time. It was less so for the coding of social presence, where the indicators proposed (Rourke et al., 2001) needed to be interpreted in the context of the social affordances (Kreijns et al., 2002) offered by Web 2.0 environments, with their automated support for threaded discussions, replying and profiling. Similarly for the coding of teaching presence, it was felt that the proposed indicators (Anderson et al., 2001) suggested instruction and 'teacher as subject expert', rather than being more neutral with a stance that equally embraces peer learning and 'tutor as facilitator'. The CoI framework would benefit from an update to the indicators proposed for coding messages, based upon recent research such as discussed here.

A model for conducting teachers' CPD in an online learning community, with tutor moderation, emerges from the research and may support future eTwinning LEs to be effective educational experiences. The model presented in Figs. 10.5 and 10.6 may also inspire useful reflections on other forms of online professional learning community; note that aspects concerning online moderation are presented separately as they may be a useful reference for tutors and online moderators (eModerators) in general. The model includes suggestions, based upon practical experience from the two LEs, concerning the pre-allocation of participants to small groups for project work; the establishment of basic rules for online interaction in forums; and the provision of opportunities for creative expression as well as structured discourse. For a full description of the research and model see Holmes (2012).

## Conclusions

There is a renewed interest in the social concept of community to support groups of learners to collaborate online, critically reflect and develop shared meaning with peers. Teachers' CPD is one area where online learning communities are seen as offering valuable opportunities for authentic and personalised learning, informal exchange of good practice and peer learning. This research offers a contribution to the literature on practice in teachers' CPD and to the CoI framework.

Action research conducted in the context of an eTwinning Learning Event (LE) and discussed in this chapter offers useful insights into how an online learning

**Aspects relevant to design of school teachers' continuous professional development (CPD) in an eTwinning Learning Event (LE):**

- ✓ **Online learning community.** An eTwinning LE is effectively a community of teachers that 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').
- ✓ **Social Interaction.** 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, an informal 'staff room', etc.).
- ✓ **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.
- ✓ **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).
- ✓ **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.

**Fig. 10.5** Emerging model of an online learning community for school teachers' CPD

**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.
- ✓ **Social presence.** Social and emotional aspects are important and should form an integral part of the activities (e.g. sharing feelings during discussions). The tutor should encourage sharing of experiences and feelings.
- ✓ **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.
- ✓ **Closing the community.** Finally, the tutor should close the community down 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.

**Fig. 10.6** Emerging model for online moderation (eModeration) of an online learning community for school teachers' CPD

community can support the CPD of school teachers. The research illustrates, and supports, Guskey's (2002) claim that there are positive benefits for teachers of trying-out what they are learning in the context of their everyday teaching practice as part of CPD activities rather than afterwards when the training has finished.



It supports the view that teachers' motivation, attitudes and propensity for change may be positively influenced by seeing for themselves the impact on their students' learning (Ertmer, 2005; Ottenbreit-Leftwich et al., 2010). The research highlights the importance of online moderation and the essential role that a tutor or teacher has in designing activities that engender collaboration, encourage critical thinking and foster mutual support amongst peers. It shows how tutors may effectively provide different levels of support and guidance at different stages of the community's development in order to help participants to build their confidence, develop their autonomy and become self-organising. These aspects are important as they help learning to go beyond the simple acquisition of skills and prepare learners for the ill-defined problems of the future—an essential feature of effective CPD.

The results suggest that social presence is essential for effective collaboration and that sufficient time, space and activities should be included for social interaction, e.g. virtual staff room. The use of the CoI framework was valuable in analysing the online learning community as it allowed a holistic view as well as examining the cognitive, social and teaching presence. The use of action research enabled further consideration of how the design of the learning environment and the role of the tutor influence the educational experience. A model emerges from the research that may be useful for designing and moderating future eTwinning LEs. It may also inspire other, similar, examples of using online learning communities for CPD, for teachers or other related professional groups.

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