

Building a community among teachers, researchers and university students. A blended approach to training

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Abstract In this paper we present a case study about a community of practice's foundation and development among Italian teachers, researchers and university students who participated in a European project aimed at developing and testing innovative pedagogical models and technologies for collaborative knowledge building. Forty-five people (34 teachers, five researchers and six university students) participated in the community of adults that interacted for a school year both face to face and online. We analyzed interactions in order to study the roles, forms and distribution of participation in that community, and the content of teachers' reflections about the activity. The analysis focuses particularly on different modalities of participation between expert teachers (involved in the project from the beginning) and novices, novice and expert being treated as relevant dimensions according to Wenger's model. Conversations were transcribed and a qualitative analysis of face-to-face and online discussion performed. The diversity of roles and different modalities of participation between social factors involved in the community, in particular between novice and expert teachers, emerged from the analysis. In final focus groups, teachers underlined innovative potentialities as well as difficulties related to computer-supported collaborative learning, both in classroom activities and in teacher training. In these final focus groups, novice teachers participated in the community, becoming more competent and conscious partners in shared planning with the expert teachers.

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Keywords Blended learning · CSCL · Community of practice · Participation · Teacher training 28
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Introduction 31

Computer-supported collaborative learning (CSCL) is playing an increasingly important role in education. 32
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Pedagogical models and software tools have been developed by researchers to facilitate collaborative knowledge building in the classroom and at a distance (Scardamalia and Bereiter 1994, 2006; Hakkarainen 2003). 34
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An international project known as Innovative Technologies for Collaborative Learning (ITCOLE), supported by the European Commission's Information Society Technologies Programme (IST), tested and disseminated both collaborative pedagogical models and new technologies in four different European countries, each of them presenting its own context in terms of CSCL models and software use. 37
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In this paper, we present a case study about community foundation and development among Italian teachers, researchers and university students who carried out CSCL during the ITCOLE project in the school year 2002–2003. We analyzed teachers' discourse both online and face to face in order to study the roles, forms and distribution of participation in the community, and their reflections about the activity. 42
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Theoretical framework 47 **Q2**

The use of technologies in education can be effective only if integrated in a theoretical framework that enhances important pedagogical dimensions or theories. In the European project ITCOLE, the research carried out by the Italian group was theoretically grounded on social constructivism, focusing on collaboration inside a community of learners interacting in blended activities, that is, alternating face-to-face actions and discussions with distance activities, mediated by technologies (Ligorio et al. 2001). 48
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Constructivism emphasizes the active and intentional function of the participant, who builds knowledge with others, through active (Piaget 1937) and social experiences (Vygotskij 1934; Bruner 1996). 54
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Constructivism becomes socio-interactionist constructivism underlining the social dimension of peer interaction and expert-novice knowledge (Bruner 1996; Brown et al. 1989). In Italy the adherence to these constructions has led many scholars of educational psychology to study the composite relations existing between educational processes and the social context of learning (Pontecorvo 1999; Ligorio and Caravita 2003). They concentrate on the situated and culturally constructed nature of knowledge (Cole 1996), each cognitive activity being specific, task-related, mediated by cultural artifacts and tools and distributed within social contexts (Zucchermaglio 2003). 57
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CSCL environments are the outcome of an educational school of thought that uses tools in our social context to carry out forms of collaborative learning (Lipponen 2002). The aim is to put into practice socio-constructivist theories following the principles of distributed cognition (Salomon 1993) and knowledge-building pedagogy (Scardamalia and Bereiter 2006): knowledge is not confined to individual minds but is distributed among people and artifacts in our environment. Collaboration is therefore the main way to organize social interaction in order to obtain shared meanings and knowledge construction. 65
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The Community of Learners model (Brown and Campione 1994) also gave Italian researchers interesting ideas about how to organize a classroom as a community creating knowledge both in class and at a distance.

When a community of learners uses different tools and different teaching methodologies to build knowledge, going beyond the mere knowledge transmission model, its activities can be defined as blended learning (BL) (Ligorio et al. 2006; Graham 2006). In the BL approach, in fact, different communication modalities (online and face to face) and different teaching methods are blended, so we can see traditional learning strategies beside innovative ones (collaborative learning, knowledge building, community building). Planning a blended learning activity requires careful context analysis, related both to social actors' needs and to organizing variables that come into play. Of all the actions that are necessary to achieve this aim (goal definition, content selection, human resources specification, skill development for online interaction, course-tuning, foundation of a culture of assessment) the selection of technologies has a crucial role.

In the BL approach, technologies are considered as artifacts (Wartofsky 1979; Cole 1996), that is to say, new cultural tools that mediate interaction between social actors and their environment (physical and social). Mediation is not neutral (Kranzberg 1985), but specified in relation to the tool and to the activity supported by it. Through the increase of potential conversation partners, new technologies give the opportunity to expand discourse forms that differ in terms of synchrony and asynchrony of communication. In a web forum, for example, asynchrony allows a better systematization of discussion activities and more time for reflecting on topics.

The four dimensions we analyzed above (constructivism, collaboration, community, blended learning) were the basis of teaching activities in the ITCOLE research; particularly in Italy this meant that learning activities were directed at producing collaborative work (cultural or artifacts), produced in communities of learning engaged in blended learning activities, both face to face and at a distance.

The community approach was also followed with teachers, in order to create a community that could share problems and suggestions, allowing teachers to enjoy the activity and reflect on pedagogical aspects.

These adult communities characterize themselves as Communities of Practice (Wenger 1998), involving a reciprocal engagement between members, a common enterprise (i.e. shared responsibility regarding problems and prospects and negotiation about activities between members) and a shared repertoire of artifacts, tools, routines, stories, languages, and actions. In a community of practice, learning comes through legitimate peripheral participation (Lave and Wenger 1991), an unsettled and dynamic participation. Novices may migrate from boundaries to the center of the community, making themselves masters. They may then contribute symbols, stories and languages: in other words, they help to evolve the shared repertoire of the community. It is interaction with more expert members that generates learning.

Expert-novice interactions are the place wherein to share the community's stories through making clear knowledge that is local, tacit and specific to a community, and that is communicated and shared through narration (Stewart 1997). Knowledge acquisition is therefore a process that passes through clarification, socialization and interiorizing the implicit knowledge. Each member takes part in this process by telling something so as to be a legitimate and acknowledged competent community member and to contribute to the community's knowledge development. On the basis of newcomers' and old-timers' interaction there is a process of micro-negotiations and of joined interpretation practices that form the daily activity of working communities (Zuccheromaglio and Alby 2005).

Communities of practice, through a blended approach, are used as vocational training places, particularly for teacher training and for improving the use of technologies in school, from a perspective of in-service training that goes along with working practice, as stated in the Lisbon Strategies for Education and Training (European Commission 2000). Blended communities of practice are used as resources for professional development and for sharing reflection on didactical practices, in other words as a reflective tool to improve professional practice (Kirschner and Lai 2007).

The ITCOLE project

The ITCOLE project (funded by the European Commission in the Information Society Technologies (IST) framework IST-00-III.2 "School of Tomorrow") was focused on developing innovative pedagogical models, design principles, and technology for collaborative knowledge building to be used in European education. Researchers, technicians, teachers and students of six different European countries (Finland, Germany, Greece, Italy, the Netherlands and Spain) participated in the project, each with a different role and task. The project consortium was made up of pedagogical, technical and design partners, all collaborating to develop, test and evaluate software tools and pedagogical practices in various European schools.

The ITCOLE project lasted 2 years and started by reviewing the state of the art in CSCL theories, practices and tools, implementing and then testing the first working prototype of a new CSCL system called Synergeia (phase 1). The Synergeia software (<http://bscl.fit.fraunhofer.de>) was explicitly designed to support collaborative learning and knowledge building according to the Progressive Inquiry Model (Muukkonen et al. 1999). Teachers and researchers in Italy, Greece, Finland and the Netherlands tested the prototype in classes, evaluating its usability (phase 2) and giving feedback to their technical partners (Germany and Spain). Evaluation and software improvement went on throughout the second year of the research, and were particularly dedicated to the development of innovative pedagogical practices (phase 3).

The experimentation of innovative pedagogical practices in the four different countries (phase 3) involved 84 teachers and 1,413 students in all, and took place with different typologies of activities and pedagogical models. In Italy 34 teachers and 375 students, aged from eight to 13, participated in phase 3 of the research. Six of these 34 teachers had already participated in phase 2, testing the Synergeia prototype.

The setting and the pedagogical model of Italian schools participating in the ITCOLE project presented some specific contexts, distinguishing the Italian classes from other European partners.

The Italian projects were mainly characterized by distance collaboration and by the organization of students working both in small groups and in classroom collaboration. The main pedagogical interest was the implementation and evaluation of the Community of Learners model (Brown and Campione 1994). According to this model there was a plurality of tools and activities: the software developed in the project (Synergeia) was only one of the tools used for the creation of a common product integrated in the curriculum. Computers were used in group work (writing activities, multimedia projects and so on) and Synergeia afforded students the opportunity to exchange their work at a distance and collaborate to generate a unique collective product. Moreover, according to the blended learning model, collaboration was implemented both in class and in online activities. Teachers acted as organizers and supporters of students' activities, sustaining in-class and online communities (Veermans and Cesareni 2005).

In the third phase of the ITCOLE project, Italian teachers carried out several classroom projects, to further test the pedagogical models and the Synergeia software with their

students. The aim of this phase was to develop and experiment with innovative pedagogical practices using virtual environments for learning and communication.

With this object in view we considered it to be very important to create a community of adults (teachers, researchers and university students) that could discuss classroom activities both online and face to face, sharing suggestions and problems related to the activities.

The research

In this paper we present one case study concerning the interactions carried out in the community of adults, with both face-to-face and online activity.

Aims

The aim of our analysis is to explore the foundation and development of an adult community, focusing on teachers' different modalities of participation. In particular, we want to analyze which roles are established and which are the forms and the distribution of participation when teachers discuss (both face to face and online) and reflect on the activity and its pedagogical value.

A further aim is to analyze the content of teachers' reflections in order to understand which aspects they considered more relevant and more problematic in the educational activities they carried out and to find possible indicators of success and difficulties related to the implementation of computer-supported collaborative learning activities in Italian schools.

Method

Based on a cultural psychology perspective (Cole 1996), activities were planned, carried out and analyzed in relation to the situated, local and social value of observed social practices. Looking at the activity as it was carried out between participants, we chose to consider theoretical constructs as tools that could be set up and redefined through the observation of concrete case studies, rather than rigid models that can only be confirmed or rejected by data (Fasulo 1998).

Our research interest was in relating actual practices generated by participants, not to provide a general and generalizable model, but rather trying to catch the "situatedness," specificity, and richness of the observed interactive context (Zuccheromaglio 2003), through methodological and data analysis choices that were consistent and effective in terms of the identified research goals.

Participants

Forty-five people participated in the community of adults in the second year of the ITCOLE project (phase 3). This community comprised 34 teachers, five researchers and six university students from four different Italian towns (Rome, Bari, Avellino and Milan).

The setting of the case study

One of the fundamental assumptions of the research described here, according to the Action Research Model (Lewin 1946), was the firm belief that, in order to put into practice experiences of real didactical innovation, it is necessary to involve teachers and researchers in a sole community of research before proposing collaboration among pupils.

For this purpose we expended much effort in teacher training on pedagogical and technical aspects. The community of Italian teachers and researchers was large (45 people) and spread across different towns: the major group was in Rome, involving 29 teachers, four researchers and five university students; a smaller group was located between Bari and Avellino, where four teachers were supervised by one researcher and one university student; another teacher participated in the activity from Milan. We scheduled both face-to-face meetings in Rome and Bari/Avellino, where the majority of teachers worked, and simultaneous group collaboration in Synergeia. The pedagogical models pursued with the adult community, therefore, were those of a community of practice and of blended learning, using both online communication tools and face-to-face meetings in order to develop and support the community.

Teachers began to participate in the community at the beginning of the school year, when the first meeting was organized in each town and space for discussion in Synergeia was created. Six of the 34 teachers (five in Rome, one in Milan) had already participated in the ITCOLE activities of phase 2, testing Synergeia software, and the other 28 were novices in the use of computer-supported collaborative learning environments. School activities for the ITCOLE project started in December, and university students participated in them, acting as observers and as teachers' helpers for all technical problems. Face-to-face meetings were also organized during the activities, and in May teachers participated in small focus groups (four or five people per group) discussing pedagogical values and problems of blended learning activities in schools. Each focus group was guided by a researcher who asked specific questions about the activity as a conversation starter (for example: Did the activity change your ideas about learning and instruction? How did the blended activity change your school practices? Did your assessment practice change?).

Data collection and analysis

We collected and analyzed data regarding: (a) one face-to-face meeting of the Rome community, at the beginning of the activity; (b) the online discussions of the whole community, lasting 3 months; and (c) the teachers' focus group of the Rome community at the end of school activities.

During teachers' meetings for the Rome group (the largest one) a participant observer collected audio recordings of activities, so we have data about face-to-face and distance collaboration, the first analyzing recordings of face-to-face conversations, the second analyzing notes in the discussion forum. A qualitative analysis of the content of face-to-face and online discussion was performed. In addition, a quantitative descriptive analysis of online data (number of contributors) was conducted in order to explore different levels of participation in the community.

Discourse analysis of data collected in the adult community aimed to describe both the different forms of participation and the different roles that took place in the community, to underline the successes and difficulties of the pedagogical experience.

Results

The constitution and development of the adult community

In this section we analyze the adult community activity at the beginning of the ITCOLE project's second year: we examined both online and face-to-face discussion. The aim is to show how the adult community began to take shape in these "places" of interaction.

The face-to-face discussion

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First of all, we analyzed one face-to-face meeting among the adult community located in Rome.

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At the beginning of the second year, 23 teachers, three researchers and three university students had a face-to-face meeting in order to discuss the opportunities and difficulties evidenced in the first year of the activity. They also planned the forthcoming classroom activities. Among the 23 teachers, 18 were “novices” involved in this project through “expert” colleagues (five teachers), who participated in the experimentation from the beginning. University students participated as technical supporters of the novice teachers in the classroom activity and online.

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The meeting began with some reflections about experiences in the past project year. Expert teachers gave their reflections on critical aspects arising from the preceding experience. Expert teachers referred to difficulties related to communication among classes and then made clear the problems relating to the whole activity (excerpt 1).

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Excerpt 1 Face-to-face meeting at the beginning of research activity. Expert teachers talking about their previous experience

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Nicola (expert teacher): “Our difficulty was that we have only one internet connection... so that before we had always to prepare work on computer and then send it... like when you send an email. [...] If each child, each dyad, could access the net then you would have an immediate communication... on the contrary we had to prepare work, to read, to send... in other words a lot of operational issues.”

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Maria Novella (expert teacher): “It’s important that groups working together at a distance have the same times and rhythms of work...otherwise they can’t collaborate. If I do a piece of work and put it in Synergeia and then the others can’t work online for a week, for 10 days, because there is a school trip or the internet connection is lacking... it happens that I go on with my work and so we are not able to advance side by side... this work requires a complete parallelism and it’s a hard fight.”

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Maria Novella (expert teacher): “Well, in the past year the main problems concerned relationships... collaboration and engagement among teachers more than that...”

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Donatella (expert teacher): “In my opinion, communication among schools working together has been very superficial... I think that time to learn how to carry out processes is necessary. Schools must communicate and discuss the process and the product of the activity.”

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Nicola, expert teacher, found difficulties concerning technological equipment¹; the lack of suitable technological equipment influenced times of online communication, slowing the flow. In the same way, Maria Novella reintroduced the importance of an effective coordination among classes with regard to times of work. In order to build positive collaboration it is important to proceed with the same rhythm. In this sense a “technological divide” among classes can damage a shared work process. From this point of view, shared planning and communication among teachers seemed to be very important. Shared reflection on process and practices was fundamental, as Maria Novella and Donatella

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¹ Data was collected 8 years ago, in schools where the use of computers was not well established. However in Italian primary schools today there are still similar problems in technological equipment, especially for Internet connection

stated. In this phase of discussion, expert teachers began to inform novice teachers about their past experience. When discussion shifted to suggestions for future activities, interaction widened. Then some novice teachers began to propose topics for future class activities and interaction began to involve expert teachers (excerpt n. 2).

Excerpt 2 Face-to-face meeting at the beginning of research activity. Novice and expert teachers talk about future class activities

Vittoria (novice teacher): “We think something about math. For example there is a novel by Zavattini about an international math competition. By the end of this novel you know that numbers are endless. So you could start from a question like ‘How many numbers are there?’ This question can open many roads...”

Nicola (expert teacher): “How many numbers are there can also become: ‘Where are the numbers?’”

[...]

Luciana (novice teacher): “Metamorphosis of a topic could offer different starting-points: we could work about transformation from the linguistic side and on changes to the environment from a scientific point of view.”

Donatella (expert teacher): “We can act like this: one group can work on the scientific side, and they prepare something to show the others that are working on the linguistic side. They put it on Synergeia, with the aim of letting the others see their works and reasoning”.

[...]

Amalia (novice teacher): “Our activity could concern relations between art and power in the Renaissance. We could reflect upon women’s social position or upon differences between Portuguese and Spanish colonialism...”

Paola (expert teacher): “The ‘Exohistory’ concept, history seen in relation to constant factors regarding historical phenomena. To consider history out of compelling national involvement. We think about building a hypertext together.”

Nicola (expert teacher): “We could use myths about the foundation of places like cities, countries...for example the dream that built a landscape for the Australians. In Rome children could work on the foundation of Milan while the Milanese students could work on the foundation of Rome. We could build a web site together.”

During the meeting each expert teacher brought his or her contribution to the discussion and only three novice teachers (of the total count of 18) began to speak, proposing topics for future class activities. Novice teachers entered an adult community that already had a way of sharing: they paid attention to their colleagues’ experiences before showing their competence.

During face-to-face discussion, researchers played the role of interaction facilitators, they did not discuss subjects discussed by teachers but had a scaffolding function. Researchers supported the development of discussion only with “continuer” expressions among teachers’ interventions, while university students remained silent.

The online discussions

Simultaneously with face-to-face meetings, researchers opened an online discussion space in Synergeia within the “Italian teachers” course. In this course all the participants from different towns enrolled, as shown in Table 1.

Table 1 Online adults' community: composition

	Teachers	Researchers	University students	Total
Rome	29 (24 novices + 5 experts)	4	5	38
Bari/Avellino	4 (novices)	1	1	6
Milan	1 (expert)	–	–	1
Total	34	5	6	45

The adult community consisted mainly of Roman members particularly in terms of teacher numbers (29 of the total of 34). There was also a small community of teachers and researchers that met periodically between Bari and Avellino (both situated in South Italy), and one teacher who joined the community from Milan.

In Synergeia, teachers, researchers and university students shared theoretical documents, descriptions of best practice, a technical guide, material concerning the ITCOLE project and spaces for discussions. In the online course researchers opened up three different discussion spaces called “Italian teachers’ knowledge-building perspective,” “How do we want to start an activity this year?” “How can I do...” These areas were dedicated to class activity planning and to Synergeia testing as well as solving technical difficulties. The adult community generated discussions in Synergeia from September 2002 to January 2003, writing a total of 96 notes. The writing activity, as shown in Table 2, involved teachers of different towns as well as researchers and university students in Rome. The researcher and the university student from Bari/Avellino remained silent online.

In the online discussion, Roman researchers and university students, supporting novice teachers in their classroom activities, were very active in terms of writing notes (\bar{X} =8.60 and \bar{X} =2.83 messages for each one respectively); they were more active online than in the face-to-face meeting where their participation was more peripheral. Teachers of the different towns were less active, writing about one note each (\bar{X} =1.06).

There were, however, differences in contribution distribution among the three towns. Teachers of the Bari/Avellino group intervened with about two notes each on average, those of the Rome group with an average of 0.72 notes each and the teacher in Milan with eight notes. The teacher living in Milan, who could not meet colleagues or researchers involved in the activity face to face, participated more actively, feeling the need for debate about activity planning and technical problems. Teachers in the Bari/Avellino group had occasional meetings with the researchers and the university students, and consulted the online community mainly to introduce themselves and to tell of their own projects.

Table 2 Online adults' community: writing activity in Synergeia

Number of notes				
	Teachers (n. 34)	Researchers (n. 5)	University students (n.6)	Total (45)
Rome	21	43	17	81
Bari/Avellino	7	0	0	7
Milan	8	–	–	8
Notes total	36	43	17	96
Notes mean	1.06	8.60	2.83	2.13

Going on with the note analysis, we now consider experts' and novices' participation in the whole online community.

In the online discussion, teachers expressed different forms of participation according to their expertise in these kinds of activities: novices' participation is more peripheral than that of expert colleagues. We can see, actually, that only eight novices out of 28 (28.75%) wrote notes in the online forum, the other 20 (71.43%) were "lurkers"; of the six expert teachers, four participated actively (66.66%) and two (33.33%) only read others' contributions.

If we analyze the participation of the 12 active teachers, both experts and novices (Table 3), we can see that expert teachers certainly had a more central role, writing four notes each on average ($\bar{X}=4$), but also that novices participated actively, writing two and a half notes each ($\bar{X}=2.50$).

In order to better understand teachers' participation dynamics it is appropriate to analyze discussion content and time.

Looking at the distribution of writing notes in the three online discussion spaces in Synergeia, we found more active participation in the area related to technical questions ("How can I do ...") where participants wrote a total of 62 notes. In the knowledge-building area dedicated to activity planning ("How do we want to start the activity in this year?") there were 15 messages. In the Italian teachers' knowledge-building perspective area, used by teachers to propose topics for the activity and to discuss collaboration among classes, there were 19 notes. Analyzing the content of all the messages registered in the three discussion areas we found that participants also debated questions concerning technological instruments in those spaces dedicated to class activity organization. On the basis of the prevailing content, we separated notes dedicated to planning and reflection on class activity ("Notes about the activity") from notes dedicated to expressing technical problems and finding an effective method of implementation of the medium in didactic activity in the planning stage ("Notes about the medium"). Of the total of 96 notes, we counted a total of 69 "Notes about the medium" and 27 "Notes about the activity". Seventy-two percent of online contributions concerned technical questions: this fact reveals the seeming importance of improving the knowledge of the instrument in order to understand how to use it competently in classroom activity.

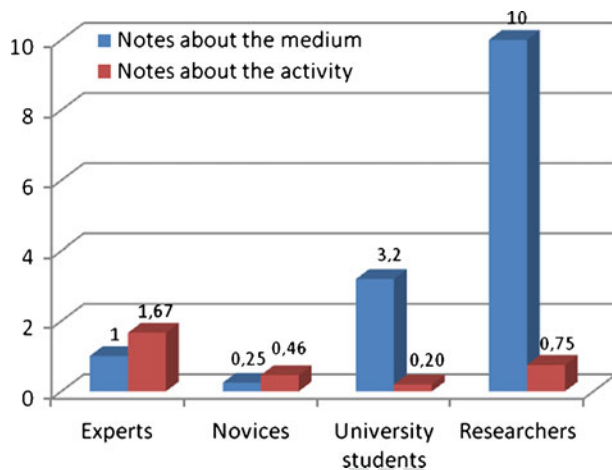
As shown in Fig. 1, researchers and university students are particularly active in writing notes about the medium, producing respectively an average of ten notes for each researcher and more than three notes ($\bar{X}=3.2$) for each university student.

Teachers wrote fewer notes concerning the medium, especially novice teachers (Expert: $\bar{X}=1$; Novices: $\bar{X}=0.25$). Novice teachers were helped to write about the medium by university students, each of whom supported small groups of novice teachers in computer lab activities. Actually it is at the beginning of class activities (first days of November) that

Table 3 Online discussion: teachers' participation (experts and novices)

Number of notes			
	Experts (4 active, 2 lurkers)	Novices (8 active, 20 lurkers)	Total (12 active, 22 lurkers)
Notes total	16	20	36
Notes mean	2.66	0.71	1.06
Notes mean without lurkers	4.00	2.50	3

Fig. 1 Average of online notes inserted by each participant: notes about the medium and notes about the activity



notes regarding technical problems became more frequent; they continued until the end of January, whereas notes about the activity ended about the middle of November.

Novice teachers delegated university students to take care of technical aspects of online activity, acting as intermediaries between novice teachers and researchers. Students asked technical questions that mainly received a reply from researchers ($\bar{X}=10$), who were experts in technological instrument use. Novice teachers, more peripheral in online activity, therefore acted through university students in order to bypass technical problems.

Teachers are usually more active in writing notes concerning activity planning; they (experts and novices) produced 85.3% of all messages about the activity.

Analyzing note content we saw that expert and novice teachers interacted when discussing the design of didactic practice, in a dynamics of reciprocal identification concerning their own “teacher position,” as we can see from Excerpt 3.

Excerpt 3 Online discussion: interaction among expert and novice teachers

“Myths in progress” by Nicola (expert teacher) 1-10-2002

I introduced a new course called “Myths” in order to discuss a possible project about this topic. Who wants to participate in this course?

To find the way, by Antonella (novice teacher) 12-10-2002

I just get off home and I already feel lost. I only know that I have the key to return. What tracks do I have to follow in order not to lose myself in the wood?

Do myths exist that allow you to guide people in a country where you don’t know the language?

Interesting, by Giudi (novice teacher) 13-10-2002

This topic is very interesting! I’d like to know more about it. Can you give me more details? This year the situation is quieter, I have more time and more opportunity for action...I’d like to work more quietly. I hope you let me know. Thanks. Giudi.

Late reply by Nicola (expert teacher) 26-10-2

I only saw your proposal today.

Ideas still have a long way to go but they seem to point the way to a landing-place.

Looking for myths about country foundations, like Atlantis, we want to investigate the imaginary creation of land surfaces. The Ugo Bartolomei school in Rome will participate with two classes (4th grade, primary school) while Mantastrega has started

activity with her own class (6th grade, junior secondary school). What do you think? 457
Here at Ferrini school we connect every Monday, from 10.30 to 12.10. 458
Bye. See you soon. Nicola 460

The novice teacher (Antonella) puzzled by the new experience ("I just get off home and 461
I already feel lost") found in her expert colleague a point of reference through which to find 462
the way to organize the new activity. 463
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Teachers' reflection on blended learning pedagogical value 466

In this section we analyze teachers' focus groups at the end of activities, with the aim both 467
of continuing to describe different forms of participation in the community and to underline 468
teachers' reflections about pedagogical values and problems related to blended collabora- 469
tive learning. Analysis of teachers' reflections has three different content levels. 470

1. Teachers' positions in the blended activity 471
2. Students' participation 472
3. Didactical practices and technology mediation 473

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Teachers' positioning in the blended activity 475

One of the topics discussed in the focus group is teachers' positions in blended activity. 476
Teachers reflect upon their own position in this kind of activity by considering two dimensions: 477
their role in this specific didactic experience and their relationship with colleagues involved in 478
the project. These aspects will be examined with reference to teachers' discourse with particular 479
attention to their being 'novice' or 'expert' teachers in the project. 480

Referring to the first dimension, teachers perceive a difference in their role in a 481
traditional activity: they determine their position as "guide," "mediator," "learner" and 482
"missionary." These positions are enacted by teachers in a flexible and varied way. 483

In the blended activity, whereas the teacher acting as a "guide" needs to direct students' 484
work times and modalities, the "mediator" accompanies the activity as an active participant 485
but not as a protagonist. 486

Unlike in traditional didactic activity, teachers seem instead to perceive the possibility to 487
be in a "learner" position. Finally they perceive themselves as a "missionary," as persons for 488
whom more work is required but not officially acknowledged. 489

In the following interaction (excerpt 4), two teachers express different positions: on one 490
side Amalia (novice) ascribes to herself a "guide" role, fixing the boundaries of the activity 491
in which students have to move (referring to "*stakes*"); on the other side Maria Novella 492
(expert) keeps for herself a "mediator" position, following students' work trying to go on 493
their pace ("*we follow them*"). 494

Excerpt 4 Different teachers' positioning: guide or mediator. Focus group of Alessandro 495
Severo Junior Secondary School, three teachers and one university student. 496

Amalia (novice): "Well, instead, I guided them (the students) a little more." 498
Maria Novella (expert): "But then, you know, you find that... that is, now we have to 500

find a track for us (the students) in order to reach a final product, as you said. I'm always frightened to be present too much, so I always try to put myself in the corner." Amalia (novice): "No, on the contrary, instead I gave them (the students) some 'stakes' in order to steer their ways... some fences which they have to stay inside... in my opinion in a second experience I would like to let them be a little bit free because they know the medium... to let them be free and to look at what they do." [...]

Maria Novella (expert): "We did not steer them (the students)... in fact it came out something a little bit different from what we (the teachers) thought... so, the way students go is this ... we follow them."

Since they propose different positions, during the interaction the novice seems to take possession of the expert's point of view, approaching the possibility of imagining a new position for herself in a future activity, a position closer to the one expressed by her colleague. In this case it seems that the interaction with a more competent colleague (in this particular kind of activity) discloses the possibility of a perspective reflection for the novice teacher.

In excerpt 5's interaction, Daniela (novice), the third teacher participating in the focus group we referred to in the preceding excerpt, seems to stand in a "learner" position.

Excerpt 5 Teacher positioning as learner. Focus group of Alessandro Severo Junior Secondary School, three teachers and one university student.

University student: "So did teaching practices remain the same or did they change in some aspects?"

Maria Novella (expert): "Practices are never static, right?"

Daniela (novice): "The question is that, for example... since, and this is a fact, students are more competent than us in using pc. So, for example, many times I asked them (the students) to help me to do this and naturally this is an upsetting of roles, right? I come to ask you how to do this thing and you show me how to do it, this is extremely positive. So for this reason the medium can support a particular approach that has to be however our teaching basis... I agree with Maria Novella... I believe we can work more and better through this medium... but first of all we have to have specific main lines for teachers that are orientated in a certain way..."

Daniela, picking up Maria Novella's reflection, refers to an "*upsetting of roles*" in which the teacher, availing herself of students' technological competence, can "create a relation of reciprocal learning" (as Daniela states on another occasion in this same focus group).

The availability of a technological tool seems to amplify the possibility to express a specific conception about the relationship between teaching and learning, a conception that already directs didactical practice.

The question is to take possession of "*new strategies concerning computer mediated relations*" (as Donatella, expert teacher, says in excerpt 6); the teacher is on a "learner" level because he has to train himself and to innovate his didactical practice.

In this kind of activity it is more necessary for the teacher's position to be "*brought under discussion*" (or questioned): the teacher becomes an activity "mediator" giving students the space to be protagonists.

Excerpt 6 Teacher positioning as mediator. Focus group of via Casal del Marmo Junior Secondary School and Ugo Bartolomei Primary School, five teachers and two researchers.

Donatella (expert): "The teacher can be disoriented because he's not able to use computers... my students are more competent than me at using it. [...] In my opinion, the generation gap... it's a big novelty for us... I see that first junior class students use computers very easily... and then the hard work concerning the relation with the others... it has to be guided in a certain way... it can't be left to itself... we need new relational strategies... this is a learning of new strategies concerning computer-mediated relations... computer is still very unknown in the didactic."

Paola (expert): "However, we can know different educational models..."

Donatella (expert): "In order to know different models we need different teacher training. In order to have schools with almost an average quality of professional level, we have to allow teachers to study... it's a very long process"

Antonella (novice): "I started my discourse saying that we are here because we experimented with a route..."

Donatella (expert): "You are right."

Antonella (novice): "Apart from this, it's true that we are accustomed to group working but in this case there is something more: the tool... the mediated communication... I want consciousness about what it means... and perhaps I want me to be conscious first of all. We (as teachers) are partly put into discussion... You say: "I'm not still the center of the learning activities" ... but, even if I create student groups, even if I walk through these groups, all things come back to me... I can act as a filter for the activity. Perhaps the computer is useful in order to filter a little less, giving more space to students' culture construction."

In this interaction the quality of the pedagogical reflection overcomes the distinction between novice and expert teacher, involving critical consciousness developed by these teachers in previous participation in specific educational and formative contexts. Teachers' interaction is supported by an evident affinity on a pedagogical reflection level, because two of them (Donatella and Paola) share everyday didactical practice.

Discussion between these two teachers defines another teacher position in a blended activity, a "missionary" teacher who has to sustain a heavy workload as in traditional didactic (excerpt 7).

Excerpt 7 Teacher as a missionary. Focus group of via Casal del Marmo Junior Secondary School and Ugo Bartolomei Primary School, five teachers and two researchers.

Donatella (expert): "This work asks us to do an enormous amount of homework... an enormous amount of homework that only a missionary can do but not a professional woman."

[...]

Paola (expert): "This tool helps reflection; school lacks reflection, reflection intended as way of study and its metacognition... so if this tool compels us, perhaps more the adults than the children, to reflect, it's really an advantage. [...] In my opinion it's something meritorious as in the case of other tools that perform the same innovation"

Donatella (expert): "But it's an innovation for missionary people... Who proposes these things to the school has to stop thinking that teachers are missionaries... here there is a crucial question... because in this way only four people make it but not the mass... and we know it is so."

When teachers' efforts to transform didactical practices is not officially acknowledged and supported, dissemination and sharing of the innovation is restricted. Educative and

formative policies are needed in order to build a school culture oriented to innovative didactical practices.

Concerning the second dimension, that is, reflections regarding relationships with the colleagues involved in the project, all the teachers (leaving out of consideration the level of experience in this kind of activity) noticed that participation in this project offered them an opportunity to “network.” In excerpt 8 Nicola (expert) and Teresa (novice) underline the utility of this experience in order to collaborate with teachers; they notice the added value of using a technological tool that enriches practices, amplifying interaction possibilities in the adult community.

Excerpt 8 Importance of teachers collaboration. Focus group of Contardo Ferrini and Istituto comprensivo San Cesareo Primary Schools, four teachers and one university student.

Nicola (expert): “Well, if I had to sum up the points of this experience... If I had to ask myself “What has it been useful for... for me as a teacher? Has it been useful to organize a didactical activity during these years?”... I reply ‘Yes, it is.’ It’s a tool that supports teacher intervention and a discussion model... but it’s not so far from our ways of work in cooperation. I’m thinking of MCE (Educative Cooperation Movement)... I’m thinking of some activities we developed starting from CIMI experiences [...] Well... sharing among teachers is stimulated by these experiences... we are compelled to think... to apply the old conceptual maps to the network among us... it’s a good thing... It’s a lot of time since I found large groups of teachers working on projects like this.”

Teresa (novice): “This aspect fascinated me very much, I like it: this cooperation that is restored [...] I’m very interested in it... for a lot of time I didn’t find this cooperation anywhere.”

Students’ participation

Another topic tackled during focus group discussions were students’ positions during the activity, how it helped in increasing motivation, agency and sense of responsibility towards the common job.

In the excerpt below (nine) teachers of one of the junior secondary schools involved in the project were dealing with the subject of students’ participation modalities: students immediately performed as active agents, without any need for clarification by the teachers and without any concern for their job evaluation. Moreover, teachers underlined the motivational aspects of the blended activity that pressed students to engage much more in curricular activities such as writing and revising texts.

Excerpt 9 Modalities of students’ participation. Teachers’ focus group in Alessandro Severo Junior Secondary School, three teachers and one university student.

Daniela (novice): “Now, in this spirit, I tell you an anecdote that concerns me, that perhaps should be significant; I felt so ashamed when my students suddenly, straightaway, without any preliminary work, had a go at it and began to write. They began to write as they talk, so they wrote also very trivial phrases, putting one word/ four mistakes and I, as an Italian language teacher, for an instant identified myself

with these students of mine and I would rather die because, I say: "There, this is the example I'm setting?". Then, thinking it over, I said: "No, it is right like that," and it is correct that this big shame should be left, probably it is my shame and not my students' because they are not aware of it ... just as an example of spontaneity. Now it is true that knowledge has not to be spontaneous, rather it has to be extremely ... how can I say ... built on the ground of a series of filters, however it is also true, I think, that spontaneity can be a value for children as young as ours ..."

Maria Novella (expert): "Also because in this way they correct themselves afterwards. I don't know if you noticed it (addressing Daniela) there are no longer so many texts roughed out like that ..."

Daniela (novice): "[...] they got stuck into what others offered them, making absolutely vacuous references and comments, but however this knowledge building spirit was really manifest in their will to intervene also having nothing relevant to say ..."

Maria Novella (expert): "All in all I think that ... that however with regard to driving motivation it is really good ... because anyway it put a process in action."

Daniela, novice teacher, noticed a different modality of students' participation compared with the usual school activity, a participation that is spontaneous and active from the very beginning. This triggered a reflection on her method of relating to this knowledge-building modality, not reasoned or filtered by teachers, but extremely spontaneous. Therefore she tells the group her initial difficulties about giving up control of the activity: her "shame" about students' mistakes reveals her feeling of responsibility about the product that her students convey to the distant group. The starting insecurity was overcome by reflecting on the value of students' spontaneity: they launched into communication with others without any "adult" worry about spelling mistakes, with a strong motivation to communicate.

Maria Novella, who, thanks to her previous experiences, was aware of the positive value of spontaneous and unstructured participation, supported her novice colleague's reflection, confirming and strengthening it: the habit of writing made students pay closer attention to writing and to self-correction. Together they delineated the participation process of the students, strongly motivated to participate in knowledge-building activity, and they came together to define the importance of the activated process in comparison with the product.

Didactical practices and technology mediation

Teachers' reflections about didactical practices, during focus groups, assessed the innovative potentialities of new technologies, distance communication specificity and the characteristics of blended didactic in a specific activity's context.

Innovation of practices

Technological tools bring innovative potentialities to everyday school practices. Writing, for example, is renewed through a web tool that makes available a public space for text-sharing (excerpt 10). Web writing is enduring (it leaves some trails), it is open to subsequent rereading and reflection.

Excerpt 10 Innovation of practices. Teachers focus group in Alessandro Severo Junior Secondary School, three teachers and one university student.

Maria Novella (expert): "The possibility to write something that remains in the memory, that is this indistinct space where all the internet things are ..., I wrote it and it stays there, and if I go to open it tomorrow I can find it."

Amalia (novice): "They find it."

Maria Novella (expert): "As I can find it so can others ... to do something that leaves a trail, while usually when you do your homework the job finishes when the teacher has looked at it and told you "good" or "it is a tragedy, do it again", doesn't it? There it is something that lasts and so, in this way, there is also a stimulus to do a good job and so to reread and revise texts."

The possibility to recursively reflect on the produced text seemed to be motivating for students: unlike the homework, where the teacher is the unique addressee, a shared web text seems to stimulate the search for a "good expressive style." Therefore this text has a social nature; it is not a self-referential text, but a piece of writing that meets the point of view of the other and is built in interaction with the other.

The innovative potentiality became effective only through a school activity planning that connected tools, techniques and aims in a coherent and positive way. The relevance of the planning aspect, shared by the teacher group, clearly comes out from the statement of Daniela, novice teacher: *"I think that, beyond all, if the work aim is implied in the work itself, in its operational modalities, I think that perhaps we should also give to children a goal to reach, so that they can see themselves that the whole is aimed at a product [...] there, I wish I can rethink and reuse the tool [Synergeia]. I'd like to plan a very little project, but well done, with a final product."* Daniela, on the basis of learning built in this first experience, can imagine a future and more complex organization of the activity. Awareness of the necessity for planning is the base for consequent blended activity.

Distance communication

Teachers' reflections highlighted the characteristic features of asynchronous distance communication, a distinguishing trait of Italian activities in the ITCOLE project. In teachers' discourses we can distinguish two different aspects connected with distance communication: one is the spatial side, the physical distance, that strongly motivated children to be more responsible for messages posted in the forum; the other is the "time" side, the communication delay, that divides classes and did not motivate them because of the lack of an immediate answer. Reflections on distance communication problems that they meet with during activities helped teachers to imagine different ways of organizing activities using the web-based learning environment. In previous excerpts we could see teachers thinking that students' motivation had been fostered by the presence of the "other" at a distance that aroused curiosity, expectation and motivation towards writing. In excerpt 11 primary school teachers noticed how the presence of the "other" let students pay more attention to communication forms, that are different due to the lack of nonverbal communication.

Excerpt 11 Reflection on distance communication potentialities and problems. Focus group of Contardo Ferrini and Istituto comprensivo San Cesareo Primary Schools, four teachers and one university student.

Vittoria (novice): "Communicating, I told her, now ... it could also be the fear of a great responsibility, when I have to put something that goes at a distance, that is still

there, I don't know how the others take it, I don't know... because there is this tool. Because in face-to-face discussion what happens? You can also see the face of the other, so you recalibrate during the ... in that moment you are always ... They told me: 'Teacher, we don't tell them that it is wrong, we tell them that it isn't right in our opinion'. So they, you see, without my suggestions! So, maybe, there is also a discourse of responsibility for what they send far off, isn't there?

[...] They said: '... and now teacher?' and now we must wait for them to read and answer, these children with whom you began to discuss, we have to wait. And days go on."

[...]

Teresa (novice): "Physical distance, in person, but there is also distance in time; maybe the time one should not be useful! I mean the distance with a far-off conversation partner... it could maybe stimulate them."

Vittoria (novice): "Yes, that is really motivating!"

Teresa (novice): "But the time distance, perhaps it isn't necessary; what's the use? I can't understand ..."

Nicola (expert): "We used it more with the idea that it's a tool to connect people that are at a distance, didn't we? The idea that I'm advancing ... what is it? It is the fourth time here I'm in these projects? I mean it is possible to use it (*the software Synergeia*) as a tool for people that share the same room: in other words, we hardly used all that knowledge building. We build objects, don't we? And all the "problem" side is left to class discussion; if we could manage to bring the debate in writing, in digital form ... using the software, we could let children be more autonomous! Because in some ways ..."

Teresa (novice): "He's speaking about autonomy, that is intriguing; you say: if I work in a different way with the computer there is more autonomy and less dependence on the teacher? Is that it? Did I understand?"

Nicola (expert): "Oh yes, because the class discussion, however, although we are democratic ... not so much! [...] In that way it is true that the discussion is more decentralized as regards the teacher, because you have three children on one side, three on the other, in the same class and they have to reach an agreement about how to work, and they send messages like: 'It's a good idea! That's really good, let's work on it,' and the other: 'this idea must be widened' through processes... right, with drawings or icons ...' (*he refers to the symbols of thinking types in the software*)."

Teresa (novice): "So, 'working at the same time in the same room', are you saying it? There are two children there, two others there, they are working and sending messages; and this should resolve what? The simultaneous nature of the message... however it has to be solved, but I mean, the different room, which is the problem? The problem is that they are not working together at the same time?"

Nicola (expert): "The two aren't mutually exclusive! I'm saying that we used it more with the idea of the mail, the old correspondence."

Teresa (novice): "I understood. And why should it work better? I mean, this idea of simultaneousness of the same room seems to be, as you say ..."

Nicola (expert): "Because it compels to reason!"

In this excerpt Vittoria, novice teacher, underlines how the lack of nonverbal communication makes children more responsible as regards their messages and makes them think about more suitable communication styles to communicate their thought and, at the same time, not to offend others. Teresa agrees with her colleague's suggestion and regards physical distance as a stimulating aspect; but her reflection turns then to asynchronous communication problems.

Communication troubles between classes during the activities lead her to reflect upon their repercussions both on children's motivation and on knowledge building. Long delay causes a fall in motivation, but also problems when coming back to contents after a long time. Vittoria and Teresa underline these negative aspects, considering the possibility of a less delayed communication and welcoming with interest the suggestion by Nicola, expert teacher, of using Synergeia as a communication tool between students that share the same room as a possibility for classroom collaboration. Nicola, fortified by his long experience of the project, can imagine new modalities of using the software; he suggests the possibility of looking at the instrument in a new way, not only connecting it with distance communication but complying more with the knowledge-building model proposed by Synergeia and used by other European partners. The expert teacher can look at the software with more awareness than the novice, and he could imagine new modalities to use it that can overcome logistical problems. Teresa, who is a novice teacher in the project but an expert one regarding collaborative practices at school, catches in Nicola's speech something other than a mere solution to asynchronous communication problems, so she asks Nicola to clarify his thought: transferring the debate to the software, it should be possible to provide more active participation by children and greater autonomy; in class debates teachers are inclined to speak too much and to direct discussion excessively. Teresa is really interested in deep understanding, and asks Nicola to make clear the meaning and the possibilities of this new modality for instrument use.

Nicola's experience seems to open up new practices and the novice teacher puts herself in a position of active listening, recognizing the competence of the other and asking questions to understand his ideas.

Distance collaboration is not a unique form of collaboration enhanced by the activity; teachers remarked on the specifics of a blended didactic, that blends together distance and in-class collaboration for knowledge building, adding also the use of different methodologies and tools. Full distance collaboration in Synergeia does not seem to be completely achieved, but the activity on the whole led to increased face-to-face collaboration, as Enea, novice teacher, asserts: *"But collaborative learning paradoxically is seen more in the group that works in class instead of through internet interactions."* They were particularly educational choices, such as working in small groups, that enhanced in-class collaboration, as Maria Novella, expert teacher, states in another conversation: *"Collaboration between students..., there was a lot, certainly, in small groups; because, even though the instrument provides individual work at the computer, we work in small groups, so there was a lot of collaboration in groups."*

As we said before, we discussed blended learning not only in terms of blending together online and face-to-face activities, but also in terms of different teaching methods (individual and small group learning, active learning, discussions...) and different tools that integrated computer and internet use, enlarging students' experience and their ability to look for and use information, as emerges from Amalia's speech: *"For ours (students) it is the first experience, and I must say that to be able to organize a complete and organic thought, to put together also ... You can value it also as an enrichment, and then the ability to move through a set of papers, or computer files, or advertisement, or Touring Club ... on the whole, we used everything."*

Discussion and conclusions

The analysis of this case study led us to reflect about the training and didactical opportunities provided by a blended approach to the activities in a community of practice comprised of teachers, researchers and university students. We examined the interaction carried out in the

community of adults, with both face-to-face and online discussion, focusing on teachers' participation. We studied different modalities of participation between expert teachers (involved in the experimentation from the beginning) and novice teachers (who entered the group at the beginning of the second year of the activities, third phase), novice and expert being used as relevant dimensions according to Wenger's model. These differences became clear, with specific modalities, both in face-to-face meetings and in online discussion.

The expert teacher assumed a central role in face-to-face meetings at the beginning of the activity as well as in online discussions, bringing his/her previous experiences to bear in reflecting on critical and potential aspects of the activity and embodying a sort of anticipated socialization in favor of the novice teacher. His/her active role does not lead to the imposition of his/her own experience, but to sharing it with novice colleagues. Past experience, particularly in terms of didactical practice, is a lively basis for discussion, open to new points of view and to other interpretations, legitimating novices' peripheral participation and offering them the opportunity to develop a more conscious involvement in the activity. Sharing past experience in the community is the way to innovate future practices.

In the face-to-face interaction, the novices' initial silence became active listening, giving back to the other the awareness of reciprocal acknowledgment: they agreed with the experience of expert colleagues and felt entitled to suggest cues for future activities. Novices indeed seemed to feel a professional acknowledgment by the experts that addressed them as qualified partners in teaching practice: "colleagues" with whom they shared, in real terms, the school context.

In the online discussion, novice teachers were more peripheral, and used university students as intermediaries for the activity, as a technological join between class activity and tool use. Novices seemed to acknowledge the university students as "experts" in technological language, giving them the task of taking care of the implementation of tools in class activities. On the other hand, novices found that their expert colleagues provided a point of reference and a reciprocal acknowledgment in discussing educational activities. The researcher seemed to act as a kind of participant similar to the university students, mainly offering his/her own technical competence to the teachers, recognizing their experience in educational practices. In this phase, in both face-to-face and online activities, the researcher did not delve deeply into the activity, reserving its discussion for teachers, but he/she guided and supported knowledge acquisition as regards the sponsored tool. The researcher probably assumed this role depending on the particular phase of the project: the activities at the beginning of the second year, in terms both of school projects and of community-building, increased with the entry of new teachers. This made it essential to build shared knowledge about the tool that mediated interactions in the adult community and would be used in classroom activities.

In the focus group, at the end of the activity, the expert teacher proved to be a reference for the group, welcoming and strengthening novice teachers' reflections: novice teachers, strong in the experience carried out, that is related not only to their classroom activity but also to the interaction with more expert colleagues in a community of practice. Novice teachers seemed to be inside the community in a more competent and conscious way: They are now able to imagine new pedagogical scenarios for the organization of the activity, becoming more competent partners in shared planning with the expert teachers.

Teachers became aware of the innovative potentialities related to a CSCL and blended approach in everyday school practices; and also of conditions in which potentialities can be effective. On the one hand they underlined positive aspects (connected with motivating students to engage in responsible participation in knowledge-building activity and enlarging students' experience and abilities); on the other hand, they point out difficulties related to technical equipment and time division among classes participating in the project.

Teachers were aware of their different roles in a blended activity; they detected the importance of training and the value of “networking” among colleagues. Training organized in terms of a blended community of practice, such as the one in which these teachers participated, offered this opportunity (as teachers also say in the focus group; see excerpt 8). Training in a community of practice in fact supported collaboration among teachers and the use of a technological tool was an added value that enriched practices by amplifying interaction possibilities in the adult community.

The considerations related here concern the specific study carried out, and are not intended to provide a general model. In the methodological and theoretical perspective we chose, cognitive activity is interpreted as an intersubjective process, socially organized, that succeeds through interaction between individuals in a specific context (Cole 1996).

This study helps to underline the importance of fostering the adult community in educational activity planning, and legitimating and exploiting differences between social actors as a resource for their collective competence.

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