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Online teacher development: collaborating in a virtual learning environment

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Abstract

Over recent years educational institutions have been making increasing use of virtual environments to set up collaborative activities for learners. While it is recognized that teachers play an important role in facilitating learner collaboration online they may not have the necessary skills to do so successfully. Thus, a small scale professional development programme was set up and piloted by two distance universities. The aims were to develop teachers' experience of online group work; to trial a set of pilot activities which would raise awareness of factors contributing to successful collaborative online activity; and to identify professional development needs in this area. This article reports on the hands-on experience of a group of 20 teachers, examines some of the competences that are needed to successfully collaborate in virtual environments, and presents the skills that teachers need to foster online collaborative learning in the virtual classroom. Quantitative and qualitative data were collected, examining the levels of participation among participants, the collaborative activity of two groups, and teacher perception of the collaboration which took place. The skills identified include planning and managing the collaboration, designing appropriate activities, giving clear instructions and getting students to negotiate ground rules for participation, moderating at the right level, and choosing the right environment and the appropriate tool(s). While this study was carried out with language teachers, many of the findings are applicable to other subject areas where growing emphasis is placed on the development of collaborative skills.

Introduction

A number of studies over recent years have been exploring telecollaborative activities in language learning contexts (e.g. O'Dowd, 2006; Guth & Helm, 2010), that is, partnerships between geographically dispersed pairs or groups of learners. However, most of these studies concentrate on intercultural issues that can arise between learners and on institutional implications for teachers rather than the nature of collaborative learning and ways in which teachers can support this either within their own groups of online learners or within telecollaborative settings. To address this issue, the project on which this article is based focused on developing language teachers to support collaborative learning in their classes. As Michinov and Michinov (2008) explain, this type of learning, 'generally takes place in an environment in which participants exchange ideas and share experiences in order to achieve group solutions to complex problems and, in doing so, build up knowledge' (p. 1541). This follows Vygotskian theory (Vygotsky, 1978) subsequently adopted by other researchers (e.g. Swain, 2001; Doughty & Long, 2003) that social interaction is fundamental to learning.

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The academic, social and psychological benefits of collaborative learning are well documented (Panitz, 2001) and the links between collaborative learning and online learning were shown as early as 1990 (Harasim, 1990). More recently, there has been a growth in research into the potential of new web 2.0 environments for increased peer interaction and collaboration for language teaching and learning, not only in the context of telecollaborative projects between learners who are based in different countries and who speak different languages but also within language classes in distance or blended settings (Lamy & Hampel, 2007).

Although some educational managers and administrators had originally anticipated that the increased use of computer technology would reduce the number of teachers needed, in fact it has been shown, at least in relation to communicative activities (which sociocultural language learning approaches favour over the use of traditional grammar exercises and drills), that the nature of discourse facilitated electronically actually ascribes a greater importance to teachers, and thus to teacher education programmes (Belz, 2003, p. 92). This point concurs with Swain's (2001) view that collaborative tasks, in general, 'should not be seen as "stand-alone" activities. Teachers' availability during collaborative activities, and their attention to the accuracy of the final product subsequent to the completion of collaborative activities, are potentially critical aspects for student learning.' (p. 60) However, many teachers have not been trained to support online collaborative learning and often they do not bring a lot of experience of engaging in online spaces themselves. Research has shown that a number of issues may arise, for example:

- Designing appropriate tasks (Gruba, 2004)
- Promoting social interaction (Kreijns, Krischner & Jochems, 2003)
- Knowing when and how to intervene (Mangenot & Nissen, 2006)
- Promoting critical thinking skills amongst learners (Engstrom & Jewett, 2005).

Two universities were involved in this project, namely The Open University UK (OU) and the Universitat Oberta de Catalunya (UOC), and at the time the project was undertaken, both institutions were implementing changes in the use of new technologies. The OU had just announced the use of Moodle for all its courses, thus opening up the possibility of introducing asynchronous elements into its language courses (in addition to the synchronous conferencing already being used); and the UOC was in the early stages of introducing synchronous conferencing tools into an otherwise asynchronous mix of technologies. With both institutions attempting to move away from traditional approaches to distance learning that favour learner independence and individual autonomy, towards a greater focus on interaction among learners and collaborative autonomy, it was considered necessary to investigate what skills teachers need to successfully foster learner collaboration and how they could be trained to develop these skills. The rationale for the joint project was thus to combine the OU's experience with online synchronous conferencing and the UOC's expertise in online asynchronous conferencing.

Collaborative learning
A number of authors claim that many forms of digital technologies require active participation from students (e.g., Brindley, Walti, & Blaschke, 2009; Collis & Moonen, 2001; Garrison, 2006; Garrison & Anderson, 2000; Harasim, Starr,

Turoff, & Teles, 1995; Hiltz, 1998; Laurillard, 2002; Paulsen, 1992) and thus have the potential to facilitate collaborative learning. There has been some discussion on how to define collaboration. Etymologically, collaborate means to "work together" and implies the idea of achieving objectives, creating something new or different through collaboration, and not simply exchanging information (Kaye, 1992). In this article, the term 'collaboration' will be used to include what Oxford (1997) terms 'cooperation'. Guitert and Giménez (2000) define collaborative learning as follows:

> [It] is achieved when reciprocity takes place amongst a group of individuals who are able to compare and contrast their points of view in such a way that they succeed in generating a process of knowledge construction. It is a process in which each individual learns more than what he or she would learn on his or her own, as a result of the interaction with other team members. (p. 114, translated by the authors from the original Spanish)

Seen in this light, the potential of computer-supported collaborative learning environments in education is promising. In order for this potential to be realised, however, educators need to understand the various elements that make up collaborative work. Along these lines, Pereña (1996) identifies the following three vital dimensions involved in group work projects:

(1) The technical dimension of the task and the nature of the activity undertaken: certain technical skills need to be applied to complete the task at hand.
(2) The management variable: this serves as a catalyst permitting optimum functioning of all project components. Management is a special factor which integrates and harmonises the use of the various resources; it is decisive in terms of the overall result.
(3) The human or social dimension: it has to be taken into account that a team project entails a complex set of interpersonal relations involving many different points of view and interests.

Specifically related to asynchronous online settings, Guitert, Lloret, Giménez and Romeu (2005) have shown that organizational issues are extremely important, since all aspects of the process must be appropriately managed and planned by the teacher. Failure to achieve this could mean that students spend excessive time organising themselves, to the detriment of the academic task. According to Guitert et al. (2005), online collaborative work management can be divided into three separate types of activities, that is:

- project organisation and preparation (planning, distribution of tasks and responsibilities, and initial agreements)
- project monitoring and closing
- use of tools and group space

While the literature shows that online collaboration is a complex process of exchanging ideas and co-constructing knowledge, with distinct dimensions in which numerous issues come into play, and the need for scaffolding and support, many teachers do not have the opportunity to develop the necessary skills and competences for online collaboration. The project team decided to design and trial a training programme for teachers that followed the model of experiential learning which has been used in other in-service teacher development programmes in the context of technology integration (e.g. Hoven 2007). The project carried out at the OU and the UOC set out to examine how teachers themselves handled the key elements of interaction, participation, and communication; how groups were organized internally; how teachers perceived

the collaborative activity; and how feedback on collaborative activities can be provided. In this article we also consider how the findings might contribute to future teacher development programmes for virtual collaborative language learning.

Project overview

The Language Departments at the OU in the United Kingdom and the UOC in Barcelona, Spain, both offer distance language learning programmes and a joint project between its researchers was seen as a good way to capitalise on and draw together the strengths of each institution. Both institutions are keen to provide relevant and effective development for teachers working in online and blended environments, since many teachers come to this work with strong skills and experience of face-to-face classroom teaching, but often have to learn how to adjust to the specific demands of online teaching 'on the job'. In particular, there was concern to develop teacher skills which would support collaborative learning in order to fully exploit the opportunities offered by advances in technology and to enhance language acquisition through interaction.

The overall objectives of the project were thus defined as follows:

- To develop teachers' skills for facilitating online group work through hands-on experience of collaboration
- To trial a set of pilot activities which would raise awareness of factors contributing to successful collaborative online activity
- To identify professional development needs in this area

Based on insights in the literature (e.g. Guitert et al. 2005), tThe project team devised a programme of activities to be run over a six-week period with a group of 20 teachers drawn from the two institutions, aiming to give the participants the opportunity to reflect on the nature of collaboration and experience collaborative activity first hand. A summary of the activities, the tools used and the timing for each is shown in Table 1.

Table 1. Summary of project activities and timings.

Activity 1	Welcome reception	Forum + glossary	week 1
Activity 2	Debate about collaboration	Forum	week 1 & 2
Activity 3	Elluminate training	Elluminate	week 1 & 2
Activity 4	Participants organize themselves into small groups	Forum + wiki	week 2
Activity 5	Small group task: Designing a collaborative activity	Choice (group)	week 3 & 4
Activity 6	Presentation	Choice (group)	week 5
Activity 7	Feedback	Choice	week 6

An invitation to participate was sent to teachers of OU level 2 courses of French, German and Spanish (Common European Framework Level B2) and teachers of UOC English courses I, II and III (Common European Framework

Level B1+ to B2). These groups were targeted as they were working with learners who could be expected to engage in meaningful collaborative activity. Although the aim was to recruit an equal number of teachers from each institution, the final number of volunteers was eight from the OU and 12 from the UOC. These volunteers received a more detailed outline of the project activities; information about online sessions introducing them to Elluminate, the synchronous conferencing tool to be used, which was new to all participants; a brief start guide to forums; a short case study of an online collaborative task and one group's approach to that task in preparation for the debate (Activity 2). They were also asked to complete a consent form. The working language for the project was English as this was shared by all participants.

A Moodle website was created for the project with a weekly calendar with links to the instructions for the week's activity, the forums, the Elluminate conferencing space and other relevant documents (see Figure 1).
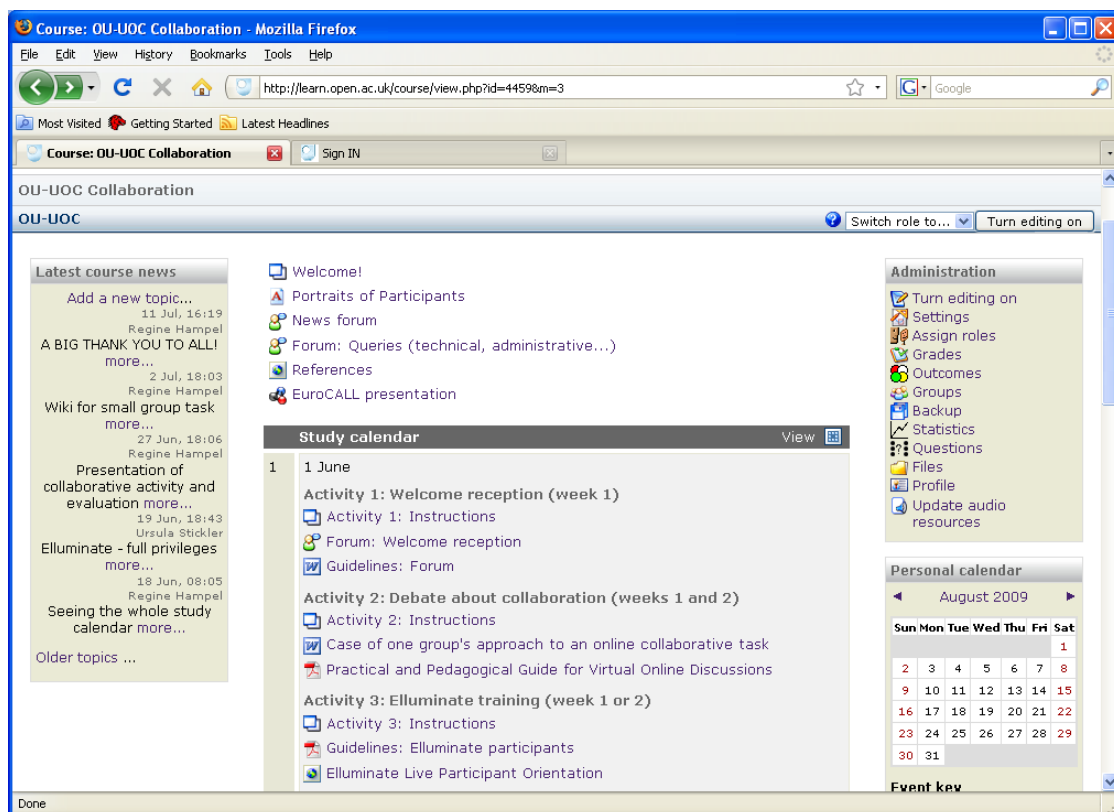

Figure 1. Screen shot of calendar.

An example of the activity instructions is shown in Figure 2.

Activity 1 Instructions

For the Welcome Reception, please post a brief introduction of yourself in the Forum named "Introduction" and read the other introductions there. In your introduction you could include information such as:

o Where you are from
o Where you currently live
o Where you have worked/are working now
o What language(s) you teach

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o Your experience with online language teaching
o Your experience (if any) in online collaborative learning

If you need help to post your message, please see the Forum quickstart document linked to the Study calendar.

Important: You should read the other introductions before posting your own. Wherever possible, try to relate what you say about yourself to what the other people have said. For example, 'Like Susan, I also hail from Liverpool.' You should also try to find what you have in common with other participants. For instance, you could respond to someone's introduction with a follow-up question, such as: 'I see that you work at the University of Barcelona. I met Professor X there last year. Do you know her?'

Figure 2. Example of Activity Instructions.

The key section of the programme was the collaborative work which participants were asked to carry out and report on in Activities 5 and 6. Firstly, they were asked to get into groups for this purpose (Activity 4). Minimal guidance was provided for this activity, as shown in Figure 3.

During this activity you will form groups that will work together in weeks 3 and 4. Use the forum to find suitable partners. You may find the document entitled 'Collaborative Learning in Virtual Environments' useful.

Once you have reached your final decision, use the wiki (Group Membership) to enter your name in the grid.

We have prepared 5 groups:
- red group
- blue group
- green group
- yellow group
- white group

Figure 3. Instructions for Activity 4, group formation.

In order to complete the collaborative task teachers were able to decide how and when they used the tools available. However, the project team also recommended the following ways of working with the tools:
a) Elluminate: initial general planning: assigning tasks, roles, timing etc.
b) Forum: designing/planning the collaborative task for students
c) Wiki: preparing/writing guidelines for the collaborative activity (for teachers and for students)
They were also advised to discuss the roles and responsibilities of group members, to define the different stages of the activity, and to assign a specific number of days for each.

Members of the project team discussed and agreed the way in which they would moderate the forums, the extent to which they would intervene and the timing of these interventions. It was agreed to avoid overly directive moderation. Modelling intervention behaviour was felt to be an important aspect of the collaborative experience that participants would undergo. According to suggestions in the literature on collaborative learning, the project team modelled forms of intervention that provided scaffolding (rather than using instructions)

and encouraged self-organisation or learners (rather than relying on teacher guidance).

Data collection and analysis

The researchers employed a mixed-methods approach to data collection and analysis. During the project, quantitative and qualitative data was collected. Moodle logs automatically collect data about users logging in and accessing particular parts of the workspace, as well as limited information on different usage (e.g. writing or reading forums, uploading or downloading information, editing or reading wiki pages). The Moodle logs from the project workspace were later converted into SPSS files and analyzed using the SPSS statistics software.

The debates and other written activities by participants on the Moodle workspace provided qualitative data. In this way, the members of the project team were able to observe the group work, noting significant behaviour or issues that arose. At the end of the project all participants were asked to complete a questionnaire about their experience (Appendix 1) and a sample of 6 teachers were interviewed (3 from each institution).

In order to gain insight into how the online collaboration unfolded during Activities 5 and 6 of the project, the researchers examined in detail the messages of one relatively successful group and another which was deemed not so successful in carrying out the task. Success was defined as the degree to which 1) there was effective communication and planning strategies used by the groups and 2) participants were able to take timely group decisions in order to move the collaboration smoothly forward. Descriptions of these two groups' approaches to the task are provided below.

The questionnaire data was collated and reviewed by constant comparison to identify key themes. Interview data was transcribed and similarly analyzed in the light of the key themes that had emerged from questionnaire data in order to establish examples. It also helped to highlight further themes.

Findings
Participation
When analyzing the Moodle logs for the most popular activity (see Figure 4), the engagement with the forum activities comes first, with the wiki in second place. The category "course view" indicates log-in to the workspace as a whole.
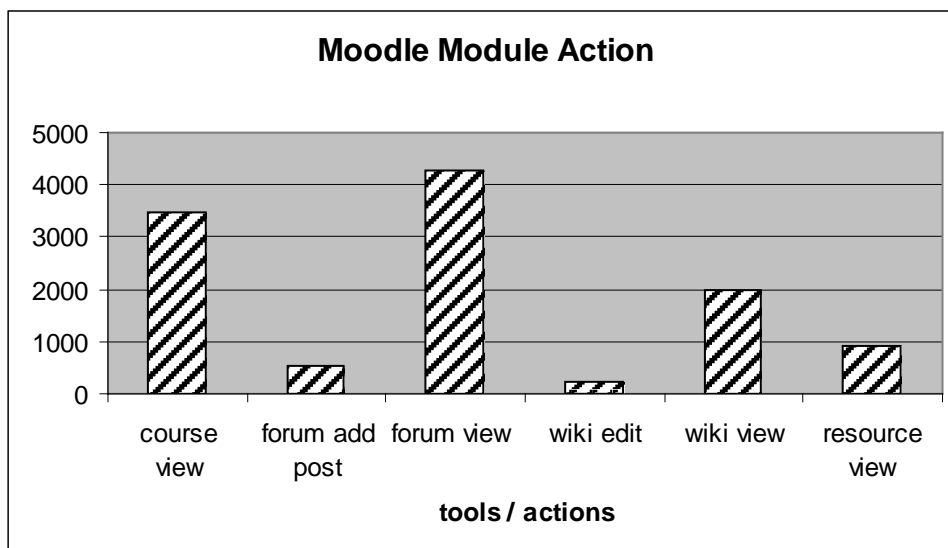
Figure 4. Actions on the Moodle workspace.

Figure 4 also shows active and passive usage, with students viewing the activities far more than actually contributing to them actively. Forums were by far the most popular tool both in terms of viewing and posting, followed by the wiki. Resources (i.e. stored word files, documents, etc.) were used passively considerably more than actively, with most users reading the prepared documents but only some uploading their own contributions.

A closer look at the forum in Figure 5 shows that teachers at the UOC, who are very experienced in teaching asynchronously, have an evenly distributed posting pattern. With an average of 25 contributions to the forum during the project there is little variation between individual users apart from one very early drop-out who did not contribute at all and skews the average. Without her, the average is 27. On the other hand, teachers at the OU had little previous experience of using forums for teaching purposes. In OU language courses synchronous voice tools are used for tutorials, and until recently written communication was limited to emails or letters. In the project (see Figure 6), forum postings by OU teachers show a more uneven distribution pattern. The most enthusiastic posters added 49 and 50 messages, whereas the less frequent contributors posted as few as eight or 11 messages. The average, however, was identical to that of the UOC teachers, at 27 forum postings per teacher.
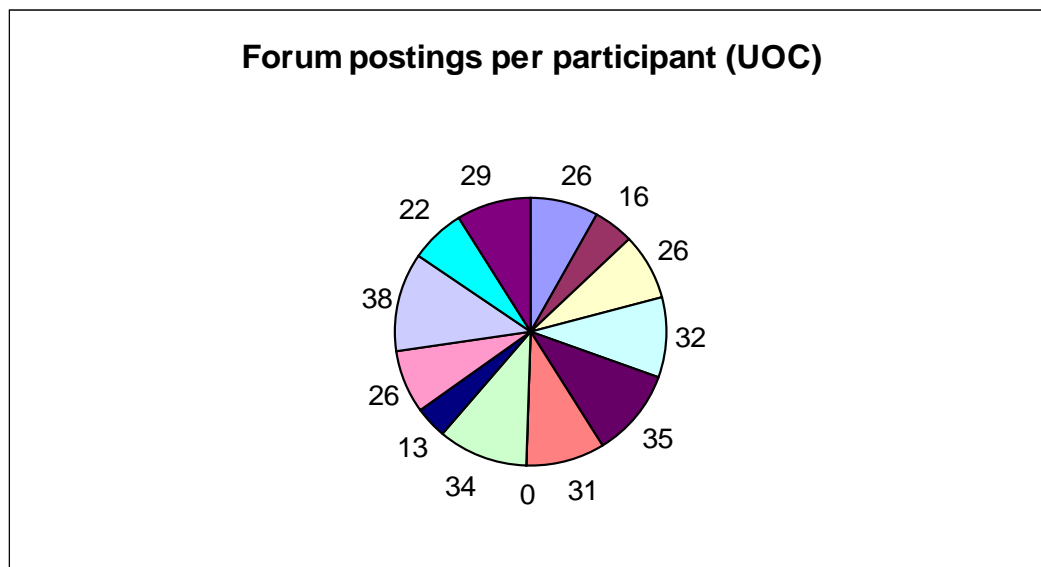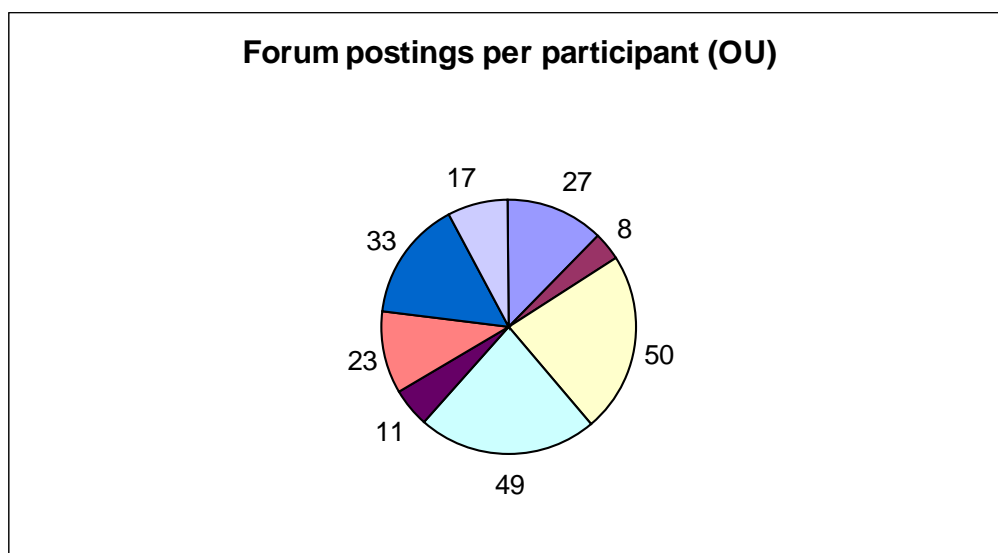
Figure 5. Forum postings by UOC teachers.

Figure 6. Forum postings by OU teachers.

Comparing specific passive and active forum usage amongst the teachers, only one person could be identified who frequently looked at postings but rarely sent messages. In general, teachers logged in to contribute, rather than just read others' contributions.

So how do these figures regarding use of tools and participation translate into collaborative activity amongst participants? The next section presents a case study of how two groups approached the small-group task, which involved designing a collaborative activity for language learners with teacher as well as student guidelines.

Two approaches to the task
Group 1: an example of relatively successful collaboration
This group consisted of three members from the UOC: Donna, Bob, and Laura; and one from the OU: Vanessa (names have been changed). An outline of the main phases of their work appears in Table 2 below. The group started off

agreeing to do the initial general planning first and to use Elluminate for this. As can be seen, the group held meetings on Elluminate on three separate occasions, corresponding to the three main phases of the evolution of the task, in order to discuss organizational issues and take decisions. The synchronous meetings were used for distributing tasks and deciding on deadlines. After each meeting, Donna sent a summary to the group forum, principally for Vanessa's benefit as she did not attend any of the meetings (on two occasions because she was confused about time difference between the UK and Spain).

Although most of the decisions and discussion of content were taken on Elluminate, there were two notable exceptions. At the beginning of the discussions, in the group discussion forum, Bob sent a cartoon suggesting a topic for the task being designed (i.e., the "demise of the family meal in Britain"). His proposal was accepted prior to the first Elluminate meeting. In addition, as Vanessa had not attended the first meeting, Donna suggested that she be in charge of transferring the task guidelines to the wiki. Fulfilling this minor job was in effect Vanessa's only contribution to the final group outcome, most likely due to the other participants having already volunteered for the main tasks during the Elluminate meetings that Vanessa had missed. All other group members contributed more or less equally to the final outcome.

In terms of managing the draft versions of the student and teacher guidelines for the task they were designing, these were exchanged as Word documents attached to messages sent to the forum. It was not until guidelines were practically finalized, at the end of the collating and discussing phase, that they were transferred to the wiki. After this time, only minor adjustments and additions were made to the content. This seems to indicate that the participants saw the wiki not so much as a tool for working on collaborative documents, but rather as a space to publish the definitive version of their work – which was something they had been offered within the task parameters.

Table 2. Outline of Group 1's approach to the task.

Phase	Dates	Communic-ation space	Activity
Initial planning	16-19 June	Forum	Group agrees procedure
		Forum	Organization of time for Elluminate meeting (16-18 June).
		Forum	Bob provides suggestion of a possible slant on the topic of family, includes a brief task outline and an image.
		Elluminate	Decisions taken: Bob, Donna, and Laura will send a draft of objectives, tools, student and teacher guidelines, and web links by 20 June. Vanessa did not attend, presumably because of confusion with the time difference. She was not assigned any specific tasks. Next meeting set for 25 June.
		Forum	Donna updates Vanessa on meeting.
Collating and discussing task	20-25 June	Forum	Bob sends draft objectives and guidelines.
		Forum	Donna circulates latest version of the student guidelines as a Word document.
		Forum	Bob sends the teacher guidelines as a Word

			document.
		Forum	Laura says that she has added links to Web sites for advice on essay writing to student guidelines.
		Elluminate	Bob, Donna, and Laura discuss additions/changes to student and teacher guidelines. Vanessa did not attend. Decisions taken: Laura and Vanessa will read through Donna and Bob's guidelines and make necessary changes by June 26. Vanessa will copy and paste guidelines into wiki by June 27.
		Forum	Laura sends her updated version of links.
		Wiki	Vanessa uploads guidelines into wiki.
		Wiki	Donna adds Laura's links to the guidelines on the wiki and a first image.
		Forum	Donna informs others of changes she has made to the wiki.
		Forum	Laura asks if language level and age of students should be added to teacher guidelines. Suggestion is taken up positively by Donna.
Preparing for the presentation	30 June-2 July	Forum	Organization of time for Elluminate meeting (30 June).
		Elluminate	Bob, Donna, and Laura discuss how to present their work and other last-minute details. Vanessa did not attend the meeting.
		Wiki	Donna makes minor additions to wiki as agreed in Elluminate meeting.
		Forum	Donna informs others of changes she has made to the wiki.
		Forum	Donna sends summary of Elluminate session for Vanessa.
		Wiki	Laura gives the task a title and adds a section on assessment.
		Forum	Laura informs others of changes she has made to the wiki and says she will now send a message to the general project forum inviting other groups to see their wiki.

Group 2: an example of less successful collaboration

This group consisted of two members from the OU: Alicia and Pamela; and two from the UOC: Cynthia and Montse. Unlike group 1 they seemed to go head first into organizing a synchronous meeting without agreeing that this was the way they wanted to proceed; only two days later did they briefly discuss what tools they wanted to use for what purpose. As can be seen in Table 3, much of the interaction from 17 to 25 June (i.e., approximately half of the time groups were provided to complete the task) focused on organizing an Elluminate meeting, which proved extremely complicated due to conflicting schedules. Although a number of proposals had been put forward in the forum by Cynthia and Montse on ideas for their collaborative project, no real discussion ensued and no decisions were taken until 25 June, when three of the four members finally managed to meet on Elluminate. These issues also had an impact on the overall

timing of the activity phases, with the group having to start preparing the presentation while they were still working on the task.

Regarding individual contributions to the collaborative task, Montse was the first to try to organize the group by sending an agenda of points that needed to be discussed to the forum. She also sent a detailed summary of the crucial Elluminate meeting that occurred on 25 June. Prior to this meeting, Cynthia also tried to organize the group at one point via a message to the forum. She came up with the idea of focusing on traditional family games and provided links to online resources related to the topic and wrote the teacher guidelines, although originally Pamela had volunteered to do this. Alicia also sent a message to the forum in order to attempt to organize the group. She was in charge of drafting the student guidelines. In contrast, Pamela spent most of the time trying to organize Elluminate meetings. In her questionnaire feedback she stated the following:

> 'Arranging to meet to formalise tasks became frustrating (I was disappointed that I only experienced Elluminate during training). I began to lose heart, when the criteria for our task didn't emerge, even after numerous messages in the forum, and after I had wasted an afternoon trying to meet up with one of the group. They did meet the next day, but there was so much confusion over timings, that I didn't go.'

She later revealed in an interview that her main motivation for participating in the project was to gain experience in using Elluminate, which she was going to have to use with her students in the very near future. However, for the other three group members finally meeting in Elluminate seemed to make a significant difference – as Cynthia's comments show:

> 'A collaborative moment – when three of the group finally managed to meet on Elluminate. There was a real sense of working together and we decided what to do and who should do what quite efficiently. One of the group had spoken to the missing group member the day before, was able to tell us her ideas.'

Unfortunately this sense of collaboration did not extend to Pamela, and, as most of the main tasks were distributed at this meeting, similarly to Vanessa in Group 1, her contribution to the final outcome was minimal compared to that of the rest of the participants.

In terms of managing collaborative documents, once the key decisions had been made regarding who was responsible for what, the draft student and teacher guidelines were added directly to the wiki. Although there were minor additions and adjustments to the guidelines, there was generally little discussion about the content. The only exception to this was in regard to the assessment criteria, which Pamela had sent as a Word document to the forum. A number of participants replied that they felt these were too detailed, and so Pamela responded by sending a simplified version. This was the only instance of a discussion of the content of a group member's contribution to the task being designed.

Table 3. Outline of Group 2's approach to the task.

Phase	Dates	Communic-ation space	Activity
Initial planning	17-25 June	Forum	Alicia posts suggestions for dates for an Elluminate meeting and a long discussion about a suitable date follows (36 posts over 7 days).

		Forum	Montse posts a proposal for the meeting agenda, with a suggestion of topic for their task (i.e. large families).
		Forum	After noting that the group is having difficulties in finding a time for an Elluminate meeting, one of the project coordinators suggests that decisions be made asynchronously via the forum.
		Forum	Cynthia proposes basic outline of the task based on traditional family games. There is no reaction to this.
		Forum	Group members continue trying to organize an Elluminate meeting.
		Forum	Continued discussion on possible topics for the group task. Montse suggests that they vote on the various suggestions put forward. There is no reaction to this.
		Elluminate	Alicia and Pamela meet on Elluminate on 24 June. The UOC participants are not able to attend due to a holiday in Spain. Alicia and Pamela discuss what details need to be discussed/decided. No decisions are taken at this meeting.
		Forum	Alicia sends a summary of the Elluminate meeting.
		Forum	More messages are sent trying to organize another Elluminate meeting.
		Forum	Pamela suggests to changing the topic from family games to family life in Spain and in the UK. There is no reaction to this.
		Elluminate	Cynthia, Alicia, and Montse meet on 25 June. It is not clear why Pamela does not attend. Decisions taken: topic (family games), objectives, language level, content, resources (websites), type of assessment criteria.
		Forum	Montse sends summary of meeting.
		Forum	Pamela volunteers to draft the teacher guidelines.
Collating and discussing task	26 June-2 July	Forum	Participants decide to work directly on the wiki rather than try to organize another meeting on Elluminate for this stage.
		Forum	Pamela posts assessment criteria (taken from the level 2 language courses at the OU).
		Wiki	Alicia posts draft student guidelines.
		Wiki	Montse makes some additions to guidelines (e.g. links).
		Wiki	Some changes by Cynthia (rephrasings).
		Wiki	Final changes to student guidelines by Alicia (rephrasings and photo).
		Wiki	Cynthia adds teacher guidelines (Pamela had promised to do this earlier).

		Forum	Pamela suggests setting up a new wiki with the assessment criteria. A discussion follows and Pamela posts simplified speaking and writing criteria.
		Wiki	Alicia adds the assessment criteria to the wiki.
Preparing for the presentation	29 June- 2 July	Forum	Participants attempt to organize another Elluminate meeting to discuss final details.
		Forum	Recognizing the difficulty in finding a time convenient for everyone, Montse suggests that they deal with final details asynchronously in the forum.
		Forum	Group decides that an image and title are needed for the final task guidelines.
		Wiki	Alicia adds an image and title to student guidelines.
		Wiki	Cynthia makes final changes to teacher guidelines.

Success factors

A comparison of the activities of the two groups indicates that tool use, participation and interaction had an impact on the level of success of the collaborative activity.

Group 1 used the forum to plan the collaborative process, discuss the content, and take decisions regarding the content. In addition, the group took advantage of having 24/7 access to Elluminate and the participants used the synchronous meetings to take crucial decisions and distribute tasks. Group 2 also used the forum for planning purposes but their discussions did not result in decisions being taken. They did not use the forum's functionalities to best effect and some members got lost in the multiple forum threads that they had created even though they were only discussing two questions – the topic of their task and the scheduling of an Elluminate meeting. As a result, 50% of the time available was spent organizing the synchronous meetings in Elluminate, with a total of seven days and 36 postings being necessary for two of the group members to meet. Similarly as with the Forum, Elluminate was used to discuss the task but decisions were either not taken or not subsequently followed up.

In terms of participation and interaction, the individual teachers in group 1 showed somewhat different levels of engagement in the forum discussions but this did not have a negative effect on their collaboration. The quality of contributions seemed to be more important than the frequency of postings. However, the fact that Vanessa did not participate in either of the Elluminate meetings appeared to have a negative effect on the general level of her participation. Another element apparently also contributing to the effective collaboration within the group was that members were able to accept individual initiatives and were willing to work together to develop these. In contrast, patterns of participation in group 2 were more unequal and insufficient consultation among members led to several misunderstandings. As a result there was much less group cohesion.

In this way group 1 was more successful in achieving reciprocity, one of the key factors for collaborative learning as identified by Guitert and Giménez (2000). Both groups managed to produce an activity suitable for a language learning class and thus co-constructed knowledge, their second key factor.

However, it was evident that the process of collaboration in group 2 was more limited and trying to work together caused more distress. With fewer of the group members being fully committed to the work being carried out not all members benefitted from the interaction. Evidence for this third key factor and the extent to which teachers increased their understanding of collaborative learning by working together is presented in the next section.

Teacher perceptions
Both the participants' questionnaire and the interviews contained questions related to the overall design of the project, the tools used and factors which served to promote or impede effective collaboration on group tasks. Based on this data, participants highlighted the following five main areas:
1. Instructions and time management
2. Forums and other online tools
3. Development of a sense of community
4. Synchronous and asynchronous tool usage
5. 'Learning by doing'.

The teachers noted the importance of establishing ground rules for both synchronous and asynchronous participation, and the usefulness of specified timescales for each activity ('It was good to have sign posts to say, do this first and dated first week, etc'). Clear signposting to key passages in background reading material was also appreciated ('I thought it was an excellent idea to make us focus on 2 or 3 sections because I didn't know what was really important and what was just additional and complementary reading'), as were individual responses to postings. A clearly-signalled closing stage to the project was also identified as being important.

Organisation of forum activities into distinct strands, or even different forums, was felt to be very useful and mini-guides for using unfamiliar tools plus opportunities to experiment with these before they were required for a task, were popular. Several participants also highlighted the need to establish a minimum frequency of participation by all group members. Wikis proved popular ('I'd never worked in a wiki before and thought it was a very good collaborative tool,' and '[t]he end product becomes independent from the individuals and that is good.').

The project team's approach to moderation was appreciated by some, ('I think the balance was right because in order to get on with your group activity you kind of don't want too much intervention but, obviously, some intervention is important'). Others were unclear what to expect ('I wasn't quite sure about the role of the monitor. I don't know. I'm not quite sure whether I was quite happy with that.') The team read postings regularly and agreed specific times each week for interventions such as summarising contributions, posing questions and making comments. This meant that team members knew what was expected of them and could plan their workload. However, this approach was not communicated explicitly to the teacher participants. At one point, the difficulties experienced by Group 2 required an unscheduled intervention to help the group to move forward and some teachers recognised that this could be an important aspect of moderation and the significance of the moderator's role ('if a student or a couple of students are unable to communicate through the asynchronous forum, then, I think you'd have to move in and kind of be the one to ask them, to carry on with the group activity, to ask them to maybe participate in another way.

Yeah, the moderator's role is important and I think you need to be clear about what you are doing beforehand.')

Working together towards common goals, especially via the asynchronous tools, brought with it a sense of community. As one participant commented, '[t]o my surprise something of a community spirit developed, mainly through the interaction on Elluminate, but of course also because we had a shared task.' The structured but non-threatening introductory activity (Figure 2) was considered especially useful here. The synchronous meetings were identified both as times for group members to get to know each other and, in most cases, for decision-making to move forward ('Using Elluminate was the quickest and the easiest way of discussing the different stages of the creation of our activity…we discussed our ideas, made decisions and each person took a role'). More explicit guidance for group formation was mentioned as a possible improvement here.

This last point emerged due to difficulties in scheduling synchronous meetings and it was suggested that grouping participants according to morning or evening availability for example, could help avoid conflicts of this sort. 'In hindsight,' one participant reflected, 'group organisation should have maybe been along the lines of who is a night worker (not me) or who is a day worker'. Similarly, it was considered that the choice of synchronous versus asynchronous tools ought to depend not just on the nature of the task, but also on the personal circumstances of group members. Guidance for negotiating ground rules for the new types of interaction required for collaborative work of this kind was identified as valuable (e.g. to 'make sure each participant reads, understands, agrees to and signs some sort of ground rules: such as reading forum entries every day, not cancelling meetings unless absolutely necessary etc.').

The practical experience of online collaboration, 'learning by doing', was highlighted by participants as extremely worthwhile (it 'made me reflect on the way we devise tasks for our students.'). Some participants suggested that it should in fact 'be obligatory for every teacher who is facilitating student collaborative work online' to have taken part in a development project of this kind, 'so that they have experienced themselves the positive and frustrating aspects, and can, therefore, offer support.'

Discussion
The aim of this study was to investigate the hands-on experience of a group of teachers with online collaboration within a training environment and identify the key skills that teachers need to develop in order to facilitate learner collaboration online. Based on our observations as project leaders, on the analysis of small group work, and data obtained from the questionnaires and interviews with participants we would like to highlight development needs in relation to the following skills.

Planning and management
Language learning activities in which online learner collaboration plays a major part require, above all, detailed planning and efficient management skills, mainly by the teacher but also by students participating in such activities. Close attention needs to be given to organizational issues such as the following: planning and distribution of tasks (whole class and small group activities), timings, guidelines and responsibilities for each task; choice of synchronous or asynchronous tools

and their appropriateness for specific objectives; balance in the number of contributions between participants; small group formation; basic training in the use of unfamiliar tools; and monitoring strategies and learner reflection. Many of the above mentioned skills are not necessarily intuitive and the project findings suggest that an experiential activity of this type, or similar, for both teachers and students, should always be embedded in the design of a training programme.

Designing online collaborative activities
The design of activities that take account of the affordances of the environment and generate learner collaboration is crucial. An initial, compulsory ice-breaker activity was shown to be an effective way for each participant to introduce themselves (with a photograph) and to help create a sense of community. In addition, a selection of practical case studies can provide a sound basis for initial group discussion of priorities and guidelines for working collaboratively. Collaborative activities should be relevant to learners, provide sufficient scaffolding and have a clear outcome. As regards closure, several participants in this project highlighted the importance of a clearly marked closing stage and the need to incorporate strategies for subsequent reflection on the collaboration which has taken place, once the project has finished.

Setting ground rules for participation
Clear instructions and general ground rules for participation (e.g. a minimum number of postings per activity) are essential and should be accepted by all participants at the outset. Ideally, these would first be negotiated with learners to ensure feelings of ownership and would provide a balance between being over-prescriptive or so open that the scope for individual and group-decision making becomes overwhelming. We would also recommend clear timings for each stage of the activity so that learners can plan their work and availability accordingly.

The project has shown the need for participants to be encouraged to negotiate their own ground rules for effective collaboration within their small groups (distribution of responsibilities; minimum frequency, length of postings etc.). In addition, it is important for both teachers and students to acknowledge the complexity of organising synchronous meetings where participants have a variety of different time schedules (geographical, professional and personal) and where common availability is an issue. A suggestion that participants should express their availability in terms of whether they generally worked online in the mornings or evenings is highly recommended.

Moderating
Regular moderation of groups by teachers/project coordinators is crucial to gain insight into progress, pre-empt conflict and give advice on issues which arise. A fine balance is required here between positive support and over-interference and, based on the experience of this project, it is recommended that wherever possible, teachers work as a team, agree on moderating policies and share any queries and doubts they might have with their colleagues. The adopted individual or team approach to moderation then needs to be explicitly communicated to those participating in the collaborative learning activity.

Using tools and group space

Selection of those asynchronous and/or synchronous tools which best promote collaborative online work in the language classroom is complex. The appropriateness of each tool will depend on factors such as the specific objectives of the task; learners' proficiency in using the tools; availability for group work (professional, family, general time constraints); and learners' experience with and commitment to group work.

Training in the use of Elluminate (the least familiar tool used in this project) was highly rated by participants and helped avoid the frustration and time wasted by many learners when expected to use online tools for which they have not been prepared. Such training workshops are highly recommended to ensure all teachers (as well as learners) are familiar with the functionalities of the tools used.

In this project the most successful groups worked asynchronously via the Forum to plan the collaborative process and work towards decisions regarding content, and they used the synchronous meetings in Elluminate to confirm these decisions and distribute tasks. The groups which functioned less successfully tried a similar approach but their efforts were hampered by a number of factors: multiple forum threads creating confusion; a disproportionate amount of time needed to organise synchronous meetings; decisions taken but not subsequently followed through; and misunderstandings, lack of sufficient consultation among members and less group cohesion. These factors indicate the importance of taking into consideration possible negative attitudes of some learners towards collaborative work, low levels of engagement, or, by contrast, the presence of one or two 'high-fliers' willing to move decisions forward which can be crucial to success. It also underlines the importance of encouraging groups to agree their own ground rules for engagement in the activity.

In summary, the following factors were found to be important when designing training programmes:

- An experiential activity should be embedded in the programme
- Activities need to be clearly structured, appropriate to the tool(s), and follow a clear sequence from ice-breaker to final closure
- Ground-rules for participation and clear timings should be established
- Moderating should be provided by teachers in a team (where possible) and according to agreed principles
- Training in unfamiliar tools prior to the start of any project is highly recommended

Conclusion

As teachers cannot be assumed to have the skills to prepare and support online collaborative learning in their classes, teacher education programmes are crucial for pre and in-service training (see Belz 2003, Hampel & Stickler 2005). These should include hands-on experience of online collaboration so that teachers themselves are exposed to the opportunities and challenges of collaboration in a virtual environment. In the context of this project, various activities were trialled which can be used for professional development purposes, activities that include participants getting to know each other, reflecting on collaboration, forming groups, selecting tools, carrying out a substantial task, and presenting the outcome. As our data has shown, teachers welcomed the opportunity to take part in the development programme.

This study has also helped to confirm a number of skills that language teachers need to develop to successfully foster online learner collaboration among their learners. These skills include planning and managing collaborative activities, designing appropriate activities (including initial and closing tasks), giving clear instructions as well as getting students to negotiate ground rules for participation, moderating at the right level (striking a balance between constructive scaffolding and interfering e.g. to encourage critical thinking skills), choosing the right environment and the appropriate tool(s) for the collaborative activity, and putting in place training for the learners. This will help to address some of the issues highlighted in previous research (e.g. Gruba, 2004; Kreijns et al., 2003; Mangenot & Nissen, 2006; Engstrom & Jewett, 2005). Only when these skills are in place can language teachers deal effectively with subject-specific linguistic and (inter)cultural aspects of online teaching.

Although this study was carried out with language teachers, many of the findings are applicable to other subject areas where learner interaction is perhaps not quite as central as in language education, but where increasingly emphasis is placed on the development of collaborative skills – which are seen as key to working in teams – to help learners prepare for the workplace.

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