A theoretical framework for the design of online collaborative tasks for ESP

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1 Introduction

The potential of online tools as resources to implement learner-centred approaches to language learning (see Warschauer and Kern 2000; Felix 2003) has led to their progressive integration into language classrooms. Collaborative learning is one of the types of learning for which Internet technology can be most helpful: the Internet facilitates many-to-many communication, both synchronous and asynchronous tasks, time- and place-independent communication, long distance exchanges, communication in real life situations, and student publishing (Warschauer 1997). Computer-mediated communication (CMC) helps learners develop interactive competence through practice (Chun 1994) and gives them the sense of having an audience (Warschauer 1996). In the field of ESP, teachers can design activities where learners use computer tools to interact freely and instantaneously with one another, and to collaborate with other learners in the performance of shared tasks related to their disciplines. These activities may help them to develop a critical skill in their future careers: the ability to communicate and collaborate with others to access, interpret and use information (Warschauer 1997). However, in order for online collaborative tasks to be effective in the ESP classroom, their design needs to be informed by sound pedagogical principles of ESP learning.

The purpose of this paper is to reflect on the pedagogical principles that should inform the design of online collaborative tasks for ESP. We will begin by discussing some necessary conditions for optimal learning in ESP. In the second part of the paper we will describe some online collaborative tasks for ESP which meet these conditions.

2 ESP learning

There are some conditions for optimal classroom language learning environments that should be taken into account by teachers when designing any language course. Drawing on previous research on language learning, Egbert and Hanson-Smith (1999) provide a list of such conditions: (i) learners have opportunities to interact socially and negotiate meaning. In order to prepare learners to perform in authentic settings, they should practice in social settings; (ii) learners interact in the target language with an authentic audience; (iii) learners are involved in authentic tasks; (iv) learners are exposed to and encouraged to produce varied and creative language; (v) learners have

enough time and feedback; (vi) learners are guided to attend mindfully to the learning process. Students need to be taught how to learn. Students will be more motivated to learn if they perceive the how and why of a task; (vii) learners work in an atmosphere with an ideal stress/anxiety level; (viii) learner autonomy is supported.

Before considering how these conditions can inform the design of ESP courses, it is first necessary to define ESP. When defining ESP, Dudley-Evans and St. Johns (1998: 4-5) emphasise three absolute characteristics: (i) ESP is defined to meet specific needs of the learners; (ii) ESP makes use of underlying methodology and activities of the discipline it serves; and, (iii) ESP is centred on the language appropriate to these activities in terms of grammar, lexis, register, study skills, discourse and genre. This definition, which emphasises the need to make use of discipline specific methodology and activities when teaching ESP, is based on the perception of the English language as a necessary tool for professional communities and of ESP teaching as a way to help students acquire the communicative skills to become members of a community. In order to initiate the students into the discourse and communicative activities of the professional community they want to belong to, ESP courses need to be discipline-based. Thus, when teaching ESP it is necessary to take into account the situations where students will need to use the English language, the tasks, communicative activities and processes (production, reception, interaction and mediation processes) related with these situations, and the genres, language, and communicative strategies used in these situations. This leads us to a genre-based approach to ESP which focuses not only on the product but also on the process of writing and on the social setting where the writing occurs.

A learning theory consistent with a social perspective of genre is the theory of situated learning. Collins (1988: 2) defines situated learning as “the notion of learning knowledge and skills in contexts that reflect the way the knowledge will be useful in real life”. In the ESP context, situated learning provides the students with the opportunity to engage in meaningful tasks in a context that reflects the purposes for which they may need to use English in the future. Herrington and Oliver (1995: 237) draw on research from the main theorists of situated learning to synthesise the features that learning environments need to have. These features are as follows: (i) authentic context, which “reflects the way the knowledge will be used in real life”; (ii) authentic activities; (iii) expert performance and the modelling of processes, which allows students to observe the task before it is attempted; (iv) multiple roles and perspectives; (v) collaboration; (vi) coaching at critical times and scaffolding; (vii) student’s reflection, to enable abstractions to be formed; (viii) articulation, “to enable tacit knowledge to be made explicit”; and, (ix) integrated assessment of learning within the tasks.

We can now examine how the conditions for optimal classroom language learning environments listed by Egbert and Hanson-Smith (1999) can be used as guidelines in the design of ESP courses:

(i) Learners have opportunities to negotiate meaning and use the target language to interact socially with an authentic audience—conditions (i) and (ii). In the context of ESP, learners need to practice in social settings related to the contexts of the specialist subject area. This is consistent with the theory of “situated learning” (Brown et al. 1989; Lave and Wenger 1991): learning tasks should ideally be embedded in the target context and require the same kind of cognitive processes that would be needed in real life. Students need to learn how to negotiate meaning and interact in the target context and for this purpose they need to be familiar with the distinctive discursive conventions of their specialist community. Helping students to use language to perform activities in their discipline involves a genre-based approach to ESP. The concept of audience is basic in this approach. Genres are communicative events used by discourse communities to achieve specific goals and their content and form are in part determined by audience (discourse community) expectations (Swales 1990: 133). Dudley-Evans (1992) defines “discourse

community" as "that group of people within a discipline or area of special interest that communicates with each other in part through the genres which they 'possess' (Swales 1990: 26), and which has expectations of what is permissible within the genre or genre that it uses". In ESP, negotiation of meaning is important to adjust the learner's production to the communicative requirements of the social context. Helping students to negotiate meaning and interact within their community involves focusing not only on the linguistic components of the genre but also on socio-cultural aspects. It is necessary to help students perceive the genre as a tool to perform social actions. They need to be perfectly aware that any use of language is shaped by the purpose of communication and must meet the audience expectations.
Johnson (1999: 60) defines "authentic audience" as "an audience that is concerned exclusively with the meaning of the speaker's message". It is important, therefore, to design collaborative activities that provide students with opportunities to produce target language output and that require meaningful exchange of information for their completion; that is, collaborative activities in which participants in the interaction become authentic audiences. As Chapelle (1998) puts it, "it may be important that learners have an audience for the linguistic output they produce so that they attempt to use the language to construct meanings for communication rather than solely for practice". One of the potential benefits of CMC is that it offers language learners many opportunities to reach authentic audiences, e.g. through electronic discussion lists, e-mail, MUDs, and the World Wide Web. These tools also facilitate interaction with others to negotiate meaning.

(ii) Learners are involved in authentic tasks—condition (iii). Tasks are meaning-focused activities where students learn language incidentally, by using the language forms required by the activity. Ellis (1994: 595) defines task as "some kind of activity designed to engage the learner in using the language communicatively or reflectively in order to arrive at an outcome other than that of learning a specified feature of the language". Focusing on the idea of authenticity, Egbert (2005) defines "authentic task" as "one that learners perceive is something that they will use outside of class in their 'real' world or that parallels or replicates 'real' functions beyond the classroom". ESP is task-oriented, since learners should ideally engage in authentic tasks, based on the methodology and activities of the discipline. Learners need to be provided with opportunities to use the language for genuine purposes, which may help them consider which language is appropriate for a specific situation, and produce output that others can understand. Thus, the concept of task is of paramount importance in ESP: it is necessary to choose authentic tasks that force students to use texts with the same purpose as they would be used by the specialist community to which they aspire to belong (Bhatia 1993).
Authentic texts are neither a necessary nor a sufficient condition for authentic tasks. The use of authentic materials related to the discipline is a positive aspect likely to motivate learners. However, when used in the class, authentic texts may not be used for authentic purposes. What matters, therefore, is that the materials are used to design activities which lead to authentic interactions, which enable learners to practice the language as it is used by the professionals in their discipline. When designing these activities, it is essential to take into account the features of tasks that yield quality interaction (Chapelle 1999). Pica, Kanagy and Falodun (1993) identified task features that play a role in prompting valuable interactions, e.g. who holds and needs the information, how information flows among interactants, whether the task goal requires request and suppliance of information, whether learners use information to work together towards meeting a shared goal. Appropriate activities for ESP would be those that required learners to exchange information with an authentic audience in order to work together towards a goal related to their discipline.

(iii) Learners are exposed to and encouraged to produce varied and creative language—condition (iv). Since the future communicative needs of ESP learners are not clearly defined, they should learn to cope in different situations, which implies getting familiar with different types of texts used in their discipline. Johns (2002) argues for the need to give students opportunities to become literate in the different genres they will need in school and society. She proposes a "socio-literate" approach, where students have to engage in assignments that help them understand how different types of texts are constructed.

(iv) Learners work in an atmosphere with an ideal stress/anxiety level and have enough time and feedback—conditions (v) and (vii). One of the principles posed by Hutchinson and Waters (1997:128) in relation to a learner-centred methodology for ESP is that language learning is an emotional experience. This principle concerns variables related to motivation, attitude, anxiety, and self-confidence. Hutchinson and Waters (1987:129) suggest a number of ways of making the learning more positive: using pair work or group work to build social relationships, giving students time to think, and avoiding pressure, putting less emphasis on the product (the right answer) and more on the process of getting an answer, valuing attitude, having "interest," "fun," and "variety" as primary considerations in material design and methodology.

(v) Learner autonomy is supported and learners are guided to attend mindfully to the learning process—conditions (vi) and (viii). One of the basic principles in current perspectives on language teaching is "to teach the learner how to learn", that is, to promote autonomous learning. In the field of ESP, it is evident that learners need to be able to go on learning and developing their communicative skills once the course is over. Since in the future learners may work in different areas and at some stage of their career they will probably need to extend their skills in English, ESP courses need to provide practice in study skills, which will help learners to cope in different situations. The purpose of ESP courses should be not only to help learners acquire a good level of competence in English, but also to help them develop skills and strategies which will enable them to manage in different contexts of language use. Learners should acquire the ability to evaluate what they need to know, and how they can learn it, in order to face a specific communicative situation.

Online collaborative learning can offer great benefits when designing learning environments for ESP if the conditions described above are taken into account.

3 Online collaborative learning

Language learning is both active and interactive. According to interactionist SLA theories, a critical element in learning a second language is interaction (Pica 1996). The purpose of interaction is to provide comprehensible input (Krashen 1985) as well as output (Swain 1995), and thus create the opportunities to express and negotiate meaning, which will lead to the development of the individual's linguistic competence. As Warschauer (1997) points out rightly, although this theory provides a foundation for collaborative language learning, in order to fully understand this type of learning, we need to turn to a sociocultural perspective of language learning. From this perspective, language learning is a social process: learners learn language and construct meanings through communication with others and social interaction. According to Vygotsky (1978), social interaction, either among learners or among learners and teachers, is essential to help learners advance through the zone of proximal development—the gap between what the learners can achieve by themselves and what they can achieve with assistance from others. Learners with a lower level are assisted by those who have

more knowledge and skills (Warschauer 1997; Beatty and Nunan 2004). Collaborative learning involves interaction between learners, who are encouraged to cooperate and work together to complete a shared task (Harasim 1990).The teacher becomes a facilitator, whose role is to assist learners in the process of learning. Collaborative tasks are especially appropriate for ESP, because they may teach learners to use language to work towards a common goal, as they will probably need to do in their future workplace, and also give them a sense of community.

The advantages of using Internet technology for collaborative learning are manifold. Already in 1990, Mason and Kaye (1990) described computer conferencing as offering new opportunities for dialogue, debate, collective thinking, and a real sense of community and interaction, with easy access to other students' ideas. For many researchers, the most useful feature of the Internet for educational applications is the ability to facilitate interaction and collaboration (Harasim 1990; Hiltz 1994). This is enabled by communication tools such as e-mail, chat rooms, web boards, instant messaging, and desktop conferencing. In addition, the Internet provides a space where the resources and materials needed in the collaborative activity can be made available when the learners need them.

Researchers on computer-mediated communication and online collaborative learning stress the positive features of this approach: time and space-independent interaction (with peers, teachers, experts, native speakers, etc.), development of a sense of community among participants, self-paced and active learning through peer support and exchange of ideas, authentic contexts for learning, opportunity for reflection before making contributions public and for analysis of previous contributions, development of social skills in an anxiety-free environment. These features have important implications for ESP instruction: learners can interact with real English speaking audience or with other ESL students, and they can be engaged in meaningful learning activities where they are given opportunities to interact in the target language and communicate for real purposes.

Recent research has demonstrated that computer-mediated interaction and collaborative computer-based learning have a number of beneficial features for ESL students (Warschauer 1998; Lamy and Goodfellow 1999; Blake 2000; Kasper 2000). Computer-mediated interaction may be perceived by students as less threatening than face to face interaction and, therefore, may encourage risk taking. Asynchronous online interaction does not impose temporal constraints, which enables students to set their own pace, and to have more time to process others' contributions and to plan and review their own contributions. This extended time to think about their own and other messages may promote meta-linguistic reflection (Lamy and Goodfellow 1999) and results in exchanges with greater syntactical and lexical complexity (Warschauer 1998). In the field of ESP, some of the greatest benefits of this kind of learning are that it creates a sense of community, helps students to perceive language as a tool to work in collaboration with others, and makes them aware of the need to produce texts which conform to the expectations of the other members of the community.

However, in spite of the potential benefits of online collaborative tasks for language learning, these are not always successful. A great deal of research on collaborative learning has focused on finding the conditions under which this kind of learning is efficient. Collaborative online learning can only be successful if learners feel part of a learning community and perceive social interaction as the way to make contributions towards a common goal (Palloff and Pratt 1999). Davidson (1994: 14) identified five critical and common attributes of cooperative and collaborative learning. These common attributes are as follows:

1. A common task or learning activity suitable for group work.
2. Small-group learning, which makes it necessary for group member to interact with one another.
3. Cooperative behaviour.

4. Positive interdependence, where all members are necessary for success.
5. Individual accountability and responsibility.

The effectiveness of collaboration will depend on the kind of task. While there are some tasks that require interaction in order to be completed, there are others that are more appropriate for students to work on their own. Appropriate tasks for collaborative learning are those where students need to reach a consensus, are involved in joint planning or are presented with different views on a topic, giving opportunities for disagreement. Although the Internet offers useful tools for collaborative learning, in order for it to be effective, it is necessary to design tasks that really promote collaboration. Among the strategies proposed by Salmon to design activities that promote online collaboration are the following (Salmon 2002: 143): create, define and identify issues associated with the desired learning outcome; identify team roles, involve the collaborative team in working together to design and carry out activities, in making choices and decisions, in creating and defending a plan, in presenting and defending the outcomes to others outside the group; provide time and space for reviewing and evaluating the learning.

The following section focuses on some online collaborative learning tasks that could be integrated in an ESP syllabus which seeks to empower students to use English in their discourse community.

4 Online collaborative learning tasks for ESP

We will discuss here four types of tasks: online discussion or debate, peer evaluation and review, web-based projects, and online simulations.

4.1 Online debate or discussion

In order to be successful in the workplace, graduates will probably need to develop skills such as organizing information, preparing and defending a position, evaluating strengths and weaknesses on both sides of an issue, approaching issues from different perspectives, etc. Debates and discussions are useful activities to get practice in these skills. In online discussions or debates students share and exchange their ideas with other members of the group, trying to reach a consensus on a topic. The Web environment offers many resources to carry out and enhance discussion language learning tasks. Online discussions can be set by different means, e.g. e-mail lists, web bulletin boards. Besides, most online learning environments, such as WebCT, have their own discussion forums, where users (both teacher and students) can post questions, answers, comments, suggestions, etc. Learners can send a message at a time of convenience, which means that they have time for reflection and articulation.

On an online debate learners may be asked to take sides for or against an issue, share opinions and defend their individual perspectives. The activity can be structured in different ways. For instance, with large classes the class can be divided into several smaller groups, and each group may be divided into two sub-groups (to argue for and against the motion). Depending on available time, each group may receive supporting documentation or they may research the topic themselves. In an academic controversy—a collaborative learning structure proposed by Johnson et al. (1991)—student pairs may prepare a short presentation defending their position. After the presentation from each pair, students discuss their position and provide more evidence. At the end, students may try to produce a consensus report.

Asynchronous technology is appropriate for online debates because it allows the learners to formulate their contributions at their pace, and to review earlier messages. The fact that learners in asynchronous discussions are writing for a real audience of

their peers, who are interested in their opinions, motivates them to express their views clearly. An important characteristic of asynchronous online discussion is open access to the floor: learners do not need to strive to hold the floor. Since there are no time constraints and learners can say as much as they wish, they all can express their opinion and incorporate their perspective. Kern (1995) found that students had more turns and produced two to four times more sentences and more words in a web discussion than in an oral discussion. This is particularly important in ESP, since some ESP learners have a lower level than the other students in the class, and, therefore, tend not to participate in oral class discussions.

4.2 Peer evaluation and review

Effective writing is the result of revising and rewriting, and this is what good writers tend to do before producing the final version. Scientific and professional communities usually construct knowledge by mutually discussing and reviewing each others' ideas. Web-based peer evaluation and review activities (e.g. reference and response to peers' contributions, comments on peers' work-in-progress) are very helpful to train learners in critical evaluation of their own work and their peers' work, in shared construction of meaning and in meaning negotiation.

Bowers (1995) describes a learning experience where ESP students use the Internet to look for information and publish their own papers online. ESP students in La Paz, Mexico, use the WWW to find articles in their discipline and write their own drafts online. The teacher then critiques the drafts online and provides links to pages where students can find linguistic or technical explanation. The students publish their papers on the Web and advertise them through listservers and newsgroups so as to get comments from interested students and professionals. These comments are taken into account to edit the papers and republish them on the Web or submit them to a scientific journal.

Kasper (2000) also reports on a content-based intercultural exchange in which high intermediate ESL students at Kingsborough Community College conducted focus discipline research and collaborated via the Internet with ESL students at three other institutions. Students had to choose a focus discipline, and international groups were created taking this choice into account. Students used the project discussion list to ask questions, make comments on their research and writing assignments, share and suggest useful resources, etc. Kasper (2000) describes the project as highly beneficial for the participating students: students' performance improved, their motivation increased, and they became more confident in their ability to handle academic tasks.

4.3 Group projects

In group web-based projects learners carry out a project together (e.g. solving a problem, designing an artefact), using ideas from all the members of the group to reach the final goal. In this process students are engaged in different types of activities, e.g. asking questions and making predictions, designing plans, collecting and analysing data, exchanging and sharing ideas and findings, drawing conclusions, creating artefacts. Projects are learner centred: learners become increasingly independent from the teacher, whose role is that of facilitator. Blumenfeld et al. (1991) list four features that facilitate the use of project-based instruction: (i) a "driving question" anchored in a real-world problem, which serves to organize and drive activities. The project must result in a product or solution that addresses the driving questions; (ii) opportunities for students to inquire and research, and, thus, apply information and learn new concepts; (iii) collaboration among students, teachers, and others in the community, which leads to the sharing of knowledge between the members of the "learning community"; (iv) the

use of cognitive tools in learning environments that support students in the representation and sharing of their ideas.

Group web-based projects include different types of tasks, such as collaborative problem solving or joint research and webpage publishing.

4.3.1 Collaborative problem solving

Problem-based learning is a form of situated learning which starts with the presentation of a real-world problem, which, in the case of ESP, should be related to the learners' discipline. Learners are encouraged to apply their knowledge and skills to understand the situation and use language to collaborate in order to find an answer to the problem. A feature of problem-based learning especially relevant for ESP is that it fosters the development of skills and learning strategies, thus helping students to become independent life-long learners. There are some distinctive characteristics of problem-based learning (Stepien and Gallagher 1993): (i) reliance on problems to drive the curriculum: the problems assist in development of skills; (ii) the problems are truly ill-structured: they are not designed to have a single right solution and perception of the problem may change as new information is gathered; (iii) students solve the problems: teachers are coaches and facilitators; (iv) authentic, performance-based assessment.

In the field of ESP the use of problem-based learning can be an answer to the needs to provide for discipline-based language learning and foster autonomous learning. This type of project has numerous advantages for ESP (Kosel 2002): discipline-related real problems increase learners' motivation, since they perceive the English class as relevant in their profession; learners can make use of their discipline knowledge to learn English; learners develop functional skills needed for their professional careers; language learning takes place in a meaningful context: English is learnt while doing something.

Collaboration greatly enhances the benefits of problem-based learning. As Gooding (2002) puts it, "the sharing of information allows the development of interpersonal skills that reflect the ways in which people need to work on a day to day basis. Sharing also brings to the problem solving process a variety of views that will need to be considered. Learners will need to negotiate the relevance and importance of information in developing solutions to the problem".

Groups may be formed by students within a class or by students from different classes (interclass projects). Two examples of interclass projects of great interest for technical students are the "International Robot Activity" (Thalman and Vilmi 1995), and the "International Environment Activity" (Vilmi 1995). They both were task-based writing projects that involved international teams of university students from three different countries. In the first activity the participating teams had to find a robotic solution to a real-world problem, which allowed them to practice technical writing in English. In the "International Environment Activity" students worked together in teams to find solutions to real-world environmental problems. Each team had to choose a problem and collaborate to complete a series of writing assignments related to the solution of the problem (e.g. a technical report recommending solutions to the problem). The outcome of the projects was the oral presentation of the solution to peers and the publication of the final documents on the World Wide Web.

4.3.2 Joint research and webpage publishing

Students in a class can also collaborate to publish a page related to their discipline. This task involves different types of activities (e.g. searching the web for certain information, selecting, evaluating and discussing about suitable material, designing the

webpage and presenting the information, communicating over the web), most of them requiring students to share and discuss their views in order to reach consensus.

Egbert and Jessup (2000) report on a design project intended for pre-college international students in an intensive English program. The project focused on interacting with and publishing for authentic audiences. In this project students had to build webpages for real organizations in the community. Students received language input in several ways: by participating in interviews with their clients, reviewing webpages of organizations similar to their clients', talking with their teams and their class, and listening to technology lectures. Learners also had to use English for activities such as summarising their interviews or compiling a final portfolio of their project. Although the teacher organised the teams and provided a loose structure for the activity, it was the learners who controlled their work process and the design of their webpages. The teacher helped with support for the learning of difficult concepts, vocabulary, and skills. Students got feedback from the teacher and the class both on the initial designs and the completed projects.

4.4 Role play simulation

CMC can be used to connect several separate learners who are taking part in a role play simulation. Each learner or group of learners plays a role in the simulated world and has to engage in genuine communication with the other learners taking part in the simulation. Role play simulations are useful to develop some communication skills that ESP learners will probably need in their work, such as taking part in a negotiation or a meeting. The learners taking part can belong to a single class or to different classes (interclass project). A good example of an international simulation is the “Import/export e-mail business simulation”, described by Feldman (1995). This simulation is a project designed for ESL learners with an interest in business. Students groups from two different countries had to collaborate to form virtual companies, going through all the stages of researching and arranging an international import/export transaction. In the final phase (evaluation) each team, working together at both sites, had to prepare a report on the company they had created, the process they went through and what they learnt.

5 Conclusions

CMC can have an important role in a learner-centred ESP course which encourages collaboration. However, the potential benefits of using the Internet for such a course are not inherent in the medium, but will derive from the appropriate design of the activities in which students engage. These activities must be designed taking into account the optimal conditions for ESP learning and the specific features of the ESP learning context. The following conditions are especially relevant: (i) opportunities to get familiar with the distinctive discursive conventions of their specialist community, in order to be able to negotiate meaning and interact in the target context. Learners need to learn about genre and need to be made aware of the importance of meeting the expectations of the discourse community. This can be achieved with a genre approach which focuses both on the linguistic components of the genre but also on socio-cultural aspects; (ii) authentic tasks that provide learners with opportunities to use the language for genuine purposes. This will encourage them to reflect about the appropriate language for a specific situation and to strive to produce output that others can understand; (iii) exposure to different types of texts used in the learners’ discipline and tasks that involve the processing and production of different types of texts and which help them to understand how these texts are constructed; (iv) an atmosphere with an ideal stress/anxiety level and enough time and feedback; (v) promotion of autonomous

learning and teacher's support to help learners develop skills and strategies which will enable them to manage in different contexts of language use.

There are various online collaborative tasks that, if designed taking these conditions into account, can be highly useful to help students develop the necessary skills and strategies to take part in the communicative activities of their discourse community. Some of these tasks are: online debates and discussions, peer evaluation and review, collaborative problem solving, joint research and webpage publishing, and role play simulation. This paper has focused on these tasks as a way of example of the kind of online collaborative tasks that could be integrated in an ESP course. However, there are more tasks that could be helpful in preparing learners for the kind of interactions in which they will need to participate in their profession, with the only constraint that, in order to be effective, they should be based on sound pedagogical principles regarding ESP learning.

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