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► **To cite this version:**

Cédric Sarré. Technology-Mediated Tasks in English for Specific Purposes (ESP). *International Journal of Computer-Assisted Language Learning and Teaching*, 2013, 3 (2), pp.1-16. 10.4018/ij-callt.2013040101 . hal-03828691

HAL Id: hal-03828691

<https://hal.science/hal-03828691>

Submitted on 5 Jan 2023

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Technology-mediated tasks in English for Specific Purposes (ESP): Design, implementation and learner perception

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Pre-print version of Sarré, C. (2013). « Technology-mediated tasks in English for Specific Purposes (ESP): Design, implementation and learner perception », *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT)*, 3 (2), [1-16](#).

Abstract:

Although many researchers have focused their attention on task-based language teaching (TBLT) in recent years, there is little published research on TBLT in technology-mediated contexts, and on how to design and implement tasks in online settings. In addition, very little can be found in the literature about learner perception of technology-mediated tasks in these new virtual learning environments. The objective of this paper is to bridge these gaps by reporting on the design, implementation and learner perception of *English For Biologists (EFB)*, an online module based on tasks and aimed at French biology students enrolled on a first year Master's degree programme.

The principles underlying the design of EFB (a combination of four action-based approaches) as well as its implementation (tutor mediation in particular) are presented in this paper, together with a concrete example of scenario. This article also offers interesting insight in the learners' perception of task-based language learning through the analysis of the answers they gave to a post-course online questionnaire. Overall, technology-mediated task reception was positive but learner feedback enabled to uncover specific problems, notably regarding the type of support provided.

Keywords: task-based language teaching (TBLT), micro-tasks, macro-tasks, English for specific purposes (ESP), scenario-based learning (SBL), mediation

Despite the amount of published research on Task-Based Language Teaching (TBLT) in recent years, very little attention has been paid to TBLT in technology-mediated contexts in the English literature (Ellis, 2010, p. xvi), especially when it comes to TBLT in online settings (Hampel, 2010, p. 132), and to how such tasks should be designed and implemented in these new – often complex – virtual learning environments. The situation is, however, slightly different when examining the French literature which often remains confidential and still needs to be more widely disseminated, which is a secondary objective of this paper. In addition, little research has been carried out to assess learner perception of task-based language learning in online settings as opposed to more traditional approaches to language learning and teaching. This article aims at bridging these gaps as it reports on the design and implementation of *English For Biologists* (EFB), an online module for French biology students at Master's level whose main objective was to give learners opportunities to interact with each other in English about subject-specific topics outside the English classroom in an attempt to help them develop their interactional competence (Kramsch, 1986; Young, 2010) in L2 through computer mediated collaborative work.

EFB is the centerpiece of a wider action-research project but only part of it will be reported on in this article. Indeed, the central questions underpinning the discussion are the following ones:

1. How should an online module of ESP be designed with a view to helping learners develop their interactional competence?
2. Once designed, what principles should guide its implementation?
3. What is the learners' perception of the module?

The general approach adopted in this paper is Hampel's 2006 three-level model of task development, based on Richards & Rogers (1986) and consisting of approach, design and procedure, where *approach* refers to the theoretical framework (language learning and affordances of the technological tools), *design* deals with the syllabus, tasks and learners' and teacher's roles, and *procedure* refers to task implementation and learners' use of tasks (Hampel, 2010, p. 135). It seems, however, that the model could greatly benefit from the addition of an extra level, as task development is an iterative process that does not stop with the implementation of the task. Indeed, as is the case in the methodology of research and development (Guichon, 2006) for the design of complex language learning systems, the task should be tested *in situ* in order to check whether the objectives have been reached as well as to get feedback from the learners in an attempt to improve the task itself. I have therefore added a fourth level to Hampel's model, namely that of *evaluation*.

Following this basic model for task development, I first present the theoretical approach to language learning that served as a guideline for the development of EFB. I then focus on the principles underlying the complex design process of the different tasks included in EFB as it combines several approaches in an attempt to take TBLT one step further; I then examine EFB's implementation process, with an emphasis on the choices made in terms of tutor mediation; Finally, I offer interesting insight in learner perception of TBLT through the analysis of the answers they gave to a post-course online questionnaire.

1. Approach

1.1. The starting point

The starting point of EFB, as is always the case in action-research which can be defined as “a small-scale intervention in the functioning of the real world and a close examination of the effects of such intervention” (Cohen & Manion, 1994, p.186), was a problem identified in the field as “action research begins with teachers identifying a concrete problem they have” (McKay, 2006, p.16): although our French first year Master’s degree students in life sciences could often deliver an oral presentation in English without too many problems, answering questions (in the questions and answers session that followed the presentation) and, more generally, interacting in English were not part of their fortes. This conclusion, which was originally more a perception of their teacher of English, was to be confirmed by the students’ own perception through some of the answers given to a needs analysis questionnaire (Figure 1).

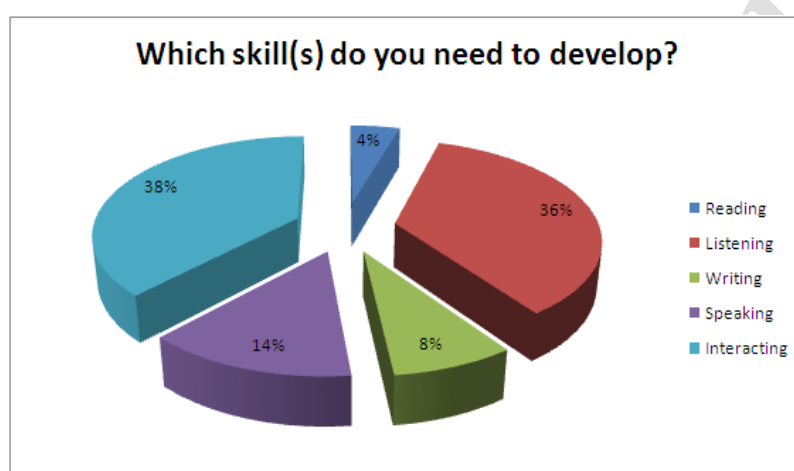


Figure 1 – Needs analysis

Drastic work thus needed to be done on interaction which, from then on, was considered as both a skill to develop (interactional competence) and a context that is conducive to Second Language Acquisition thanks to negotiation work.

1.2. Interactional competence development

Successful interaction in L2 implies more than the simple combination of speaking and listening skills. It requires the knowledge and appropriate use of specific strategies which make up *interactional competence* (Kramsch, 1983, 1986), a notion which aims at accounting for how interactants manage communication together. Interactional competence theory is based on the assumption that “all interaction is jointly constructed by all participants who draw on interactional resources in order to achieve communication” (Dings, 2007, p. 8). These interactional resources consist of those related to turn management, topic management, the knowledge of rhetorical scripts, the knowledge of the pragmatic value of certain lexis and structures and the ability to signal boundaries (He & Young, 1998). As co-construction is central to interaction, interactional competence can only be acquired through participation in interactions with more experienced individuals (He & Young, 1998), just as listening or reading skills are developed through practice. Consequently, learners have to be given numerous opportunities to interact with more competent interactants in order to develop their interactional competence.

1.3. Interaction in SLA

Interaction, defined as “a socially reciprocal action involving two or more people” (Wang, 2004, p. 91), has been researched quite extensively with regards to its potential to interlanguage development (Gass, 1997; Gass, Mackey, & Pica, 1998; Long, 1983, 1996; Pica, 1994). These researchers view interaction as an essential source of comprehensible input and have attempted to determine what type of interaction promotes successful intake. Long’s (1983) interaction hypothesis posits that exposure to comprehensible input is not enough to ensure acquisition and that it should be complemented by social interaction as it gives learners access to more accessible input thanks to the adjustments offered by their interlocutors whenever necessary. These adjustments, which occur when comprehension problems arise, increase input comprehensibility and are termed *negotiation of meaning* (Pica, 1994). Chapelle (1997) thus summarizes the benefits of interaction to interlanguage development through three characteristics: (1) interaction provides learners with comprehensible input; (2) it encourages learners to produce modified output; (3) it gives learners opportunities to focus on form through negotiation of meaning.

1.4. Negotiation of meaning

Negotiation of meaning has been defined as “the modification and restructuring of interaction that occurs when learners and their interlocutors anticipate, perceive, or experience difficulties in message comprehensibility” (Pica, 1994, p. 494). When it comes to questioning how interactions are conducive to language acquisition, Long (1983) emphasizes the importance for learners to focus on form while processing meaning, which is one of the possible outcomes of negotiation of meaning as learners’ attention can temporarily shift from meaning to form as comprehension problems arise (Long & Robinson, 1998). Focus on form through negotiation of meaning can thus occur during the completion of a meaning-focused task as negotiation of meaning and modified output are claimed to be more prevalent in goal-oriented tasks than in casual conversation (Pellettieri, 2000).

1.5. Meaning-focused tasks

Nunan’s definition of tasks as “a piece of classroom work which involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is principally focused on meaning rather than form” (1989, p. 10) laid the basis for what we now call (meaning-focused) tasks. Ellis later gave his own elaborate definition of tasks (2003, p. 16) which was based on a number of previously published definitions (2003, pp. 4-5). He put forward six main characteristics of tasks (2003, pp. 9-10): a task (1) is a workplan (2) in which meaning prevails (as opposed to form) (3) and language use is as similar as possible to language use in the real world; (4) it can engage any of the skills (productive or receptive) (5) and various cognitive processes (6) while its objective is to lead to specific language output (written or oral) which can be assessed if necessary.

Drawing on Ellis’s definition of tasks as meaning-focused real-world activities, task-based language teaching is considered to be “based on promoting real-world authentic tasks in the target language” (Thomas & Reinders, 2010, p. 3). One of the major challenges, however, is to devise ways to make tasks authentic for learners (Lai & Li, 2011, p. 1), which is where technology has definite added value.

1.6. Technology's added value

Before considering the affordances of different technological tools, it seems to me that the notion of *added value* should be considered. In other words, the following question should be answered first: with the introduction of technology in task development, “what can I do differently that I couldn't do before?” (Holtzman, 2009, p. 537).

Overall, it should first be noted that many of the challenges related to task development and implementation are due to “the temporal and physical constraints of the classroom context” (Lai & Li, 2001, p. 2) which technology in network-based settings can potentially greatly minimize. As the decision to use a Virtual Learning Environment (VLE), defined as “a software system that combines a number of different tools that are used to systematically deliver content online and facilitate the learning experience around that content” (Weller, 2007, p. 5), was made very early in the project after assessing over fifty open-source VLEs¹ (Sarré, 2008), the question was to examine what the added value a VLE was for task development and implementation. The answer is fourfold (Sarré, 2011): (1) a VLE makes it possible to organize course content in a predetermined sequence (sometimes called a learning path) without making it compulsory for learners to follow the preset sequence; (2) it makes it possible to individualize learning (through monitoring and mediation); (3) it usually offers a number of computer mediated communication (CMC) tools (text chat, discussion boards, desktop videoconferencing) which make it possible for learners to interact and collaborate; (4) it sometimes offers tools for collaborative writing (wiki) and file upload (to hand in written output).

In a nutshell, some of the benefits of VLE-mediated tasks are a bigger number of venues and resources for task performance and the possibility to offer freer less structured tasks (1) (Lai & Li, 2011, p. 4). It can also help reduce the “huge gap between the *said* and the *done*” (van Lier, 2007, p. 47) when it comes to individualizing learning (1 and 2). Other obvious interests of CMC tasks are to give rise to authentic interactions with others (3) and to make it easy and non-intrusive for the teacher to monitor learner output (2 and 4) (Stockwell, 2010). However, as CMC modes (synchronous or asynchronous, text-based or voice-based) have been shown to have an impact on language learning (Sarré, 2010; Stockwell, 2010), learners should be given access to a variety of CMC tools.

2. Design

Although tasks are the backbone of EFB, the course draws on a number of long-established well-known approaches in an attempt to take TBLT one step further. Indeed, EFB is the result of the combination of four meaning-driven approaches to task development: TBLT including *micro tasks*, Content-Based Instruction (CBI), English for Specific Purposes (ESP) and Scenario-Based Learning (SBL). All four approaches are complementary and can be considered as action-based, as they all have in common “an emphasis on the learner as an *active person*” (van Lier, 2007, p. 48).

¹ The VLE that was selected is Dokeos 1.8.3, as it was believed to be the most effective at supporting the objectives of EFB.

2.1. TBLT, or the necessary combination of *micro-tasks* and *macro-tasks*

Tasks, as defined by Ellis as meaning-focused real world activities, are at the heart of TBLT, which is also related to the Common European Framework of Reference's (CEFR) "action-oriented approach" as it considers "users and learners of a language primarily as 'social agents', i.e. members of society who have tasks (not exclusively language-related) to accomplish in a given set of circumstances, in a specific environment and within a particular field of action" (Council of Europe, 2001, p. 9).

However, the use of meaning-focused tasks raises one important issue: despite the fact that focus on form is claimed to be necessary to interlanguage development (Skehan, 2003), "the predominant approach to task-based learning (TBL) currently utilized in CMC-based CALL fails to provide sufficient focus on form" (Peterson, 2010, p. 41). Indeed, learners pay attention to meaning and very little attention to form (mainly through negotiation work as noted above), which explains why "CMC literature points toward the desirability of an expanded pre-, during-, and posttask TBLT pedagogical cycle in technology-mediated environments." (Lai & Li, 2011, p. 10). Salaberry (2001) goes as far as to write that "the success of a technology-driven activity will likely depend as much, or more, on the successful accomplishment of pre- and post-activities than on the technology activity itself" (p. 51).

Pre-tasks aim at "preparing learners to perform the task in ways that promote acquisition" (Narcy-Combes, 2010c, p. 226). They can consist of linguistic priming and review, planning activities (Willis, 1996), rehearsing, observing models, consciousness-raising activities and exercises (Narcy-Combes, 2010c). As for post-tasks, they stem from the need for follow up on task performance and usually build on the interactions generated during task completion. Narcy-Combes (2010c) identifies three major objectives of post-tasks: (1) to give the opportunity for a repeat performance of the task, (2) to encourage reflection on how the task was performed, (3) to focus on forms (whether they were problematic during task completion or not). It also has to be noted that more attention will be paid to form by learners during task completion if they are aware of the inclusion of post-tasks (Bygate et al., 2001; Skehan, 1998).

The very nature of pre- and post-tasks, which are not usually meaning-focused real world activities, created the need for some researchers to differentiate them from TBLT's central tasks: hence, Guichon (2004) came up with the notions of *micro-tasks* and *macro-tasks*, where macro-tasks correspond to the action-oriented real world tasks central to TBLT, and micro-tasks correspond to the type of activities carried out in pre- and post-tasks which "aim at developing specific language skills" (Narcy-Combes, 2010a, p. 98). Unlike macro-tasks, micro-tasks are "cognitively relatively simple, yet they allow students to assess their own learning" (Hampel, 2010, p. 141) as they are usually self-corrected in technology-mediated settings. Overall, macro-tasks create needs that should be catered for by micro-tasks whose objective is to help improve learner output in the subsequent macro-tasks. It thus seems necessary to offer learners two complementary task types: meaning-focused action-oriented tasks (macro-tasks) can indeed be complemented with more form-focused tasks (micro-tasks).

Finally, according to Ellis's typology (2003), tasks can also be either open or closed. Open tasks have no predetermined outcome and include opinion gap tasks, a good example of which could be a debate, whereas closed tasks "require students to find a solution from a finite number of choices" (Stockwell, 2010, p.88). Drawing on Pica et al. (1993) who claimed that closed tasks are likely to give rise to more negotiation of meaning, Pellettieri (2000) recommends setting up goal-oriented tasks with a limited number of possible outcomes to

foster negotiation of meaning and interlanguage development. Both task types (open and closed) were included in our module as they were believed to be complementary.

2.2. Content-Based Instruction (CBI) and English for Specific Purposes (ESP)

As noted by Butler-Pascoe (2011), CBI stems from the need to ground language learning, especially English, in the context of specific fields of specialization as countries have to compete more and more in the global economy. Leaver & Stryker (1997) view CBI as “a philosophical orientation, a methodological system, a syllabus design for a single course, or a framework for an entire program of instruction” (p. 5) which “implies the total integration of language learning and content learning” in an attempt to encourage language learning through the study of subject matter. As such, a CBI course has three main characteristics: (1) it is based on subject matter; (2) it implies the use of authentic documents as input; (3) it fulfills the needs of specific learners. So, TBLT and CBI are clearly complementary since “tasks need content to make them relevant and meaningful, and content needs tasks to engage the learners actively” (van Lier, 2007, pp. 48-49).

CBI is an umbrella term to refer to ESP (Butler-Pascoe, 2011; Leaver & Stryker, 1997). ESP is “an approach to language learning which is based on learner need” (Hutchinson & Waters, 1987, p. 19) and which is encapsulated in the simple question: why do learners need to learn a foreign language? In short, all decisions related to course content, course materials and teaching methodology stem from learner needs. As Robinson (1991) puts it, ESP “courses develop from a needs analysis which aims to specify as closely as possible what exactly it is that students have to do through the medium of English” (p. 3). A needs analysis questionnaire was thus administered to my learners: it revealed that the EFB syllabus could not be based on target needs (i.e. the knowledge and skills necessary to learners in their future profession) as the first year Master’s degree course in biology comprises four different specialisms, which means at least as many different future professions. Consequently, it was decided to base the EFB syllabus on the learners’ own perception of what will be required of them as professionals, as well as on their present needs as biology students.

However, Dudley-Evans (1997) notes that needs analysis is only the first step in ESP course development which should also include the use of the methodology and activities specific to the discipline it serves (i.e. the learners’ specialist subject) and should be centered on the language, genres, discourse and skills relevant to these activities. Indeed, the objectives of the ESP curriculum are to help learners communicate in English and master field-specific content (Butler-Pascoe, 2011). Hence, ESP courses traditionally incorporate “realistic projects and tasks that professionals in the relevant professions might face in their work” (van Lier, 2007, p. 49). When it comes to incorporating technology, Butler-Pascoe (2011) also notes that “online simulations of tasks required in the profession are valuable tools for ESP and content-based language teaching” (p. 26).

2.3. Scenario-Based Learning (SBL)

When designing EFB, the idea was to take the notion of task one step further and ground it in a more global context which would be realistic and relevant to the learners’ specialist subject: the concept of learning scenario thus seemed a relevant option. SBL refers to “any educational approach that involves the use of, or dependence upon, scenarios to bring about desired learning intentions” (Errington, 2010, p. 18), the central notion being that “the scenario or

situation carries the learning experience” (*Ibid.*). Errington (2005) identifies four main kinds of scenario which can be either skills-based, problem-based, issues-based and speculative-based. As such, learning scenarios “may constitute a given set of circumstances, a description of human behavior, an outline of events, a story of human endeavour, an incident within a professional setting, or human dilemma” (Errington, 2010, p. 18). SBL invites students to enter the scenario, take on roles and perspectives and to rise to the challenge of completing a task which can involve “problem-solving, decision-making, critical analysis, evaluation and reflectivity” (Errington, 2009, p. 586).

When applied to language learning, SBL has not given rise to much published research in English. The French literature is, however, more profuse on the concept. For example, Catroux (2006) considers that a language learning scenario makes it possible for learning tasks to be integrated in more global social actions and posits that using a scenario means putting learners in a given situation where they have to carry out a social action. Along the same lines, Bourguignon (2008) views a language learning scenario as a series of dependent tasks aiming at the completion of a mission, in relation to a given objective, through the completion of a global task. Buck (2005), who is the author of a Doctoral thesis on the use of SBL in language learning and teaching, explains that giving learners a mission implies that they are given specific roles to play, that they have to go through different steps in order to complete a real world task during which they will be encouraged to sort out, select and organize information that will be necessary for their final output (which can be oral or written and which corresponds to the completion of the mission). Buck (2005, pp. 262-271) also claims that the main components of a scenario are (1) a specific situation in which learners are put and which states the realistic roles learners have to play, (2) materials that will serve as input in the form of written and audiovisual authentic documents, (3) the process, that is the different steps that will enable learners to process information (the micro-tasks), (4) the expected output which is what the scenario leads to and which corresponds to the completion of the mission. In other words, SBL means “designing a finalized environment in terms of roles, actions, resources, methods, regulation/mediation and result” (Springer, 2009, p. 520, my translation).

To summarize, a language learning scenario is made up of tasks grounded in social practices. SBL is based on authentic and realistic situations that learners are likely to encounter in real life, which makes it easily applicable to language learning in the case of ESP courses. My understanding is that scenarios are simulations based on a series of dependent tasks leading to the completion of a mission.

2.4. Direct implications for EFB

The direct implications of all four approaches are summarized in Table 1.

<i>Approach</i>	<i>Main characteristics</i>	<i>Implications for EFB</i>
TBLT	<ul style="list-style-type: none"> ▪ real-world activities with a focus on meaning (macro-task) ▪ pre-tasks and post-tasks with a focus on form (micro-tasks) 	<ul style="list-style-type: none"> ▪ inclusion of a series of micro-tasks for linguistic priming, information processing and exercises ▪ one main task to complete (macro-task) ▪ inclusion of micro-tasks to follow up on task performance (reflection on task completion and focus on form)
CBI/ESP	<ul style="list-style-type: none"> ▪ integration of tasks in learners' specialist field ▪ needs analysis as a starting point 	<ul style="list-style-type: none"> ▪ based on learners' subject matter, i.e. biology ▪ use of authentic documents as input ▪ use of realistic tasks that learners could encounter in the real world (during their studies and/or as professionals) ▪ inclusion of a needs analysis
SBL	<ul style="list-style-type: none"> ▪ the scenario carries the learning experience ▪ a series of dependent tasks ▪ learners are put in a specific situation with a particular role to play and a mission to complete ▪ learners have to carry out a social action 	<ul style="list-style-type: none"> ▪ scenarios are called "situations" ▪ scenarios put learners in specific realistic situations they can encounter in the real world as biology students/future professionals ▪ a specific mission is given to learners, the completion of which takes the form of oral or written output (macro-task) ▪ scenarios include a series of micro-tasks which are all geared towards the completion of the mission (macro-task)

Table 1 – Four complementary approaches for EFB

EFB consists of five situations, following the same structure, each based on a specific theme and with a specific mission to complete. The input's (oral and written) linguistic complexity is in line with CEFR level B2, and tasks are progressively more cognitively complex, ranging from shorter simpler outputs (an advert, a poster) to more complex products (a guide for the general public) between situation 1 and situation 5. While micro-tasks are individual, the completion of the mission is a collaborative endeavour: all decisions related to the specifics of the final written output are collaboratively made (sharing time), and the output itself can be collaboratively written (writing time). The decision was made, however, to make the written output an individual task at first (situations 1 to 3) and to then make it collaborative in the final two scenarios. In this way, it was possible to give learners personalized feedback at first to solve the important linguistic problems detected in their output for situations 1 to 3 (as described in section 3 of this paper). The expected outcomes, (1) in terms of language output, are different language products of increasing cognitive complexity and, (2) in terms of processes, are knowledge construction (through micro-tasks, negotiation of meaning and peer scaffolding during collaborative tasks) and skill development (reading, listening and interactional competence). The details of each situation are presented in Table 2.

	Situation 1	Situation 2	Situation 3	Situation 4	Situation 5
Topic	Studies and careers in biological sciences	Safety in the biology lab	The genetics of cancer	Phytoremediation	GM food
Written input	Text from the American Ministry of Labor	Scientific article	Biology university textbook	Scientific article	Scientific abstracts from different articles
Oral input	Interviews of biological scientists	Specialized video	Specialized video	Specialized video	Conference presentation extract
Outcome (written language product)	An advertising pamphlet	A poster	Course material	A guide for the general public	A guide for the general public

Table 2 – Scenario characteristics

As mentioned above, the structure of all scenarios was identical in an attempt to quickly make learners become familiar with the format of the situations and create a sort of unity between them: each situation consists of six phases whose objectives, task types and completion modes are presented in Table 3.

<i>Phase</i>	<i>Objectives</i>	<i>Task type</i>	<i>Mode</i>
Getting Started	Linguistic priming, first contact with the theme	Micro-tasks	Individual
Reading time	<ul style="list-style-type: none"> ▪ based on written input ▪ sorting out and selecting information ▪ focus on form: lexis and grammar ▪ exercises: grammar drills 	Micro-tasks	Individual
Listening time	<ul style="list-style-type: none"> ▪ based on oral input ▪ sorting out and selecting information ▪ focus on form: lexis, grammar and phonology ▪ exercises: correspondence between spelling and pronunciation 	Micro-tasks	Individual
Sharing time	<ul style="list-style-type: none"> ▪ preparation for the written macro-task (next phase) ▪ opinion gap (open), decision-making (closed) or problem-solving (closed) 	Macro-task	Collaborative
Writing time	<ul style="list-style-type: none"> ▪ written output which corresponds to the completion of the mission 	Macro-task	Individual or collaborative
Follow up	<ul style="list-style-type: none"> ▪ personalized micro-tasks to focus on form ▪ “retrospection” sessions to analyze interactions 	Micro-tasks Micro-tasks	Individual Collaborative

Table 3 – Scenario phases

2.6. An example: “Situation 2 - Safety in the biology research laboratory”

This scenario is the second one of the five included in EFB. It puts learners in the situation of a training period that they have to carry out in a research laboratory in England. The mission that they have to complete is to update the safety rules and procedures that need to be followed in the lab and design a poster to inform users of these rules and procedures which depend on the type of work that is done.

The first phase (Getting Started) invites learners to search the Internet to find out what different signs and symbols related to lab safety and used on lab products and equipment mean. It is a sort of webquest that ensures linguistic priming, as learners will have to read and understand information from the various websites they visit.

In the second phase (Reading Time), the written input presented is an extract from an article published in *Biosafety Journal*. It deals with risk assessment in labs in which animal cell cultures are used. The micro-tasks associated to the article aim at focusing on form (finding lexis, examining certain grammatical forms, i.e. modal verbs expressing advice, obligation and prohibition, manipulating these forms) and at sorting out and selecting information that could be useful for the completion of the mission. The oral input in phase 3 (Listening Time) is an extract from a training video on the safety rules that have to be followed in a lab where mammalian cell cultures are used. The micro-tasks related to the video serve the same objectives as those related to the written input, with the addition of form-focused tasks on phonology (the aim being to notice the pronunciation of specific words in relation to their spelling as they could be useful for the completion of the mission).

Phase 4 (Sharing Time) is collaborative preparation work for the final task as learners need to decide, in groups of four, which biosafety level has to be followed in their lab (in relation to the use of specific organisms and cultures, i.e. *Brucella melitensis* and *Brucella abortus*) and what measures have to be taken in a specific problem situation (after removing cultures from the incubator and placing them into a basin, the trainee collided into another person while walking down the corridor and dropped the cultures onto the floor, which means that they sprayed onto the trainee and the other person): this is thus both a decision-making and problem-solving task that will determine the content of the written output. Collaboration can be done using either a text chat tool, a discussion board or a desktop videoconferencing tool.

As for follow up, it is determined by the decisions made regarding implementation and mediation and will be developed in the next section of this paper.

3. Procedure

3.1. Implementation, or the primacy of macro-tasks

Students had to complete all five scenarios online within a semester (12 weeks) during which they also had to attend a weekly two-hour face-to-face session in class. The face-to-face sessions were used to work specifically on scientific oral presentation skills and to provide follow up on the online tasks (as described in the next section). Students were given two weeks to complete each mission, the different situations being made available online one at a time. In other words, students had no control over the order of completion of the different scenarios, which can be justified by the fact that they are progressively more complex: it would make no sense, given the cognitive complexity of the scenarios and of the expected output, for a student to complete situation 5 before situation 1, for example. Students were divided into groups of four to complete all collaborative tasks. Although the different tasks within a given scenario are presented in a linear way, there was no obligation for learners to follow the preset order to carry out the micro-tasks: there are indeed multiple entry points in a scenario, and learners can carry out the different tasks in the order they choose. Within a given scenario, a great deal of control and flexibility is given to learners who can also choose not to complete some/any of the micro-tasks if they feel they do not need them to accomplish their mission, as completion of the macro-tasks always prevails. Hence, assessment of learner

progress is exclusively based on the output generated during the completion of macro-tasks. Indeed, it was posited that this approach should help overcome “the apparent conflict between adopting a centralized approach to task design that presupposes a linear format, while also using Web 2.0 tools that are based on a decentralized and anti-linear style of teaching and learning” (Hampel, 2010, p. 150).

3.2. Tutor mediation and feedback

The teacher’s role in technology-mediated TBLT is “multifaceted” (Lai & Li, 2011, p. 13). In the case of EFB, it is threefold: “selecting, adapting, or designing the tasks; facilitating their implementation; and creating techniques to help students notice the forms of the language” (Gonzalez, 2006, p. 13). In addition to the work provided by micro-tasks, noticing the forms of the language is done through tutor mediation and feedback. Tutor mediation, defined as “the process of interaction between the tutor (whether it is human or machine) and the learner” (Narcy-Combes, 2010b, p. 131), thus plays an important role in supporting the denativisation process (Bertin & Gravé, 2010; Grosbois, 2011).

Tutor mediation can be either proactive or reactive (Bertin & Narcy-Combes, 2007): proactive mediation corresponds to unsolicited tutor intervention, i.e. anticipating potential problems and providing ways of solving them (by designing tasks, providing tools, support and instructions), while reactive mediation corresponds to feedback and adjustment. As mentioned by Hampel (2007), some of the issues related to tutor mediation are getting the balance right between being too “hands off” and too controlling, and considering tutor and learner workloads.

One way of getting the balance right is to consider mediation in relation to the task, as tutor mediation type varies with task type (Bertin & Narcy-Combes, 2007). Indeed, ideally, mediation in technology-mediated micro-tasks should not require any tutor intervention as help, correction and feedback should be integrated in the system (automated correction and feedback) during the design process (Guichon, 2006). This is the approach adopted in the design of EFB. On the other hand, macro-tasks, the completion of which corresponds to a specific language product, require tutor mediation in addition to peer scaffolding if the task is collaborative. The question, however, is to determine what type of mediation is the most effective for this task type in an attempt to question the traditional systematic error correction approach. Indeed, it has been shown that “help to produce more adequately is more useful than ‘error’ correction, as well as being technically easier to handle” (Bertin & Narcy-Combes, 2007, p. 449). Hence, Narcy-Combes (2010b) suggests that feedback in the case of macro-tasks should be focused on process (how learners work) rather than product (quality of language output), “since it is easier and more effective to advise a learner to do a series of specific micro tasks if necessary, than to make a list of ‘errors’” (p. 129), even more so when the tutor has to deal with big quantities of learners and/or output, which makes systematic error correction impossible. Feedback on process is also claimed to be less de-motivating for learners than feedback on product (Narcy-Combes, 2010c). Consequently, tutor mediation for EFB’s macro-tasks mainly consists in inviting learners to carry out other specific micro-tasks which are not included in the original scenario but which derive from the various problems detected in their output. This approach implies that the tutor should have a bank of micro-tasks ready so that he/she can choose from it to provide learners with extra work that will be adapted to their personal needs. It was decided, however, to include error correction for one of their five language products as the main approach adopted here goes against traditional beliefs and expectations.

As for feedback on the interactions generated during the completion of collaborative tasks, it is the main objective of the scenario's final phase, *Follow up*: although it is an integral part of the scenario, which is a crucial point since learners need to be aware of the inclusion of this final step as it has an impact on how much attention they pay to form, it is not carried out online. Indeed, "retrospection" sessions (Guichon, 2011) were organized during the weekly face-to-face classes: each group of four was asked to review their interaction (which can be written or oral depending on the CMC tool used) in terms of quality of language and quality of interaction, and to suggest ways of improving it. As suggested by Hall (1999), the inclusion of such sessions enables learners to notice the use or lack of certain interactional resources and provides "linguistic and cognitive scaffolds" (p. 145) that will help them develop their interactional competence.

When making decisions regarding mediation and feedback, we should bear in mind "how crucial tutor support is – even in contexts where students are expected to take control of at least some of their own learning" (Hampel, 2010, p. 138). Checking that the adequate amount of support has been provided can be done through task evaluation.

4. Evaluation

Evaluating the tasks *in situ* in relation to both the objectives that were assigned to them and to learner perception should be part of task development as this process could uncover unexpected problems or flaws that could then be adjusted. Nevertheless, this section will only focus on learner perception as assessing task efficiency (as regards interactional competence development) would be too lengthy.

In order to get feedback from learners, an online debriefing questionnaire was designed, using a specific tool integrated in the VLE (survey tool). The questionnaire consisted of nineteen close-ended questions and one final open-ended question (for suggestions on how to improve EFB). The close-ended questions were Likert-scale type questions: after reading a statement, learners had to decide whether they *totally disagreed*, *rather disagreed*, *rather agreed*, or *totally agreed* with it. As advocated by McKay (2006), the number of options was purposefully even (four options) to force learners to make a clear decision (as opposed to consistently choosing the middle option in the case of odd numbers). Once designed, the questionnaire was entirely administered via the VLE: a URL link was generated and sent to all students enrolled on EFB who could then anonymously answer the questions online. The relatively high number of participants (N = 93) makes the results of this survey truly significant.

4.1. VLE

First of all, from a technical point of view, the wide majority of students (94 %) considered the VLE to be easy to use, which reinforces the choices made when selecting a user-friendly ergonomic environment. Besides, the different online aids and guides provided to become familiar with the technological environment provided by the VLE (learner manual, tool descriptions, etc.) were clear and detailed enough for 93 % of participants. Finally, 88 % of learners judged the overall objectives of EFB to be clear.

4.2. Scenarios

The organization of learning units in scenarios was appreciated by almost all students (99 %) and 87 % of them thought that the situations and roles they had to play were realistic. In addition, 96 % of students considered the different phases of each scenario to be clear while just under 90 % of them said that the objectives of each scenario were clearly defined. However, the combination of individual and collaborative tasks was not appreciated by a little more than a quarter of students (27 %), as shown in Figure 2, probably because of the non-flexible nature of collaborative tasks which required all students of the same group to be available at the same time (when working in synchronous mode), which was somewhat problematic for some students as their answers to the open-ended question revealed.

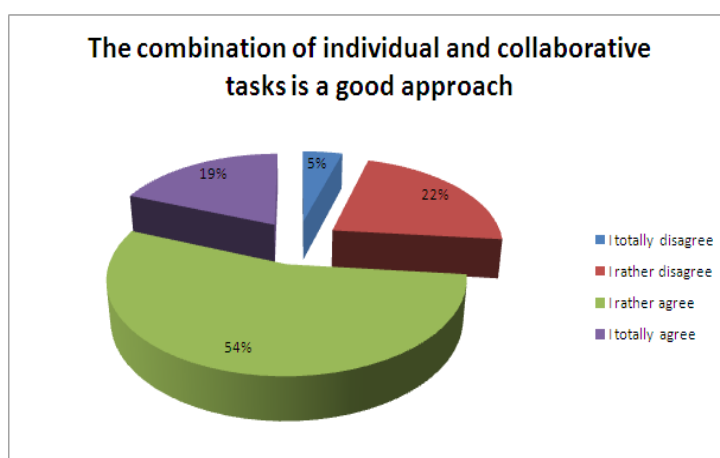


Figure 2 – Task reception

As for the themes of the scenarios, they were considered to be interesting and in line with their specialist field by over 80% of students, while just over half of them thought that completing the tasks did not require any specific in-depth knowledge in their specialism.

4.3. Knowledge and skill development

Learner perception regarding the progress made while completing the tasks offered in EFB is quite interesting. While over three quarters of students (76 %) claim to have built up their lexis, 70 % claim not to have developed their knowledge of grammar. As far as skill development is concerned, learner perception is represented in Figure 3 below.

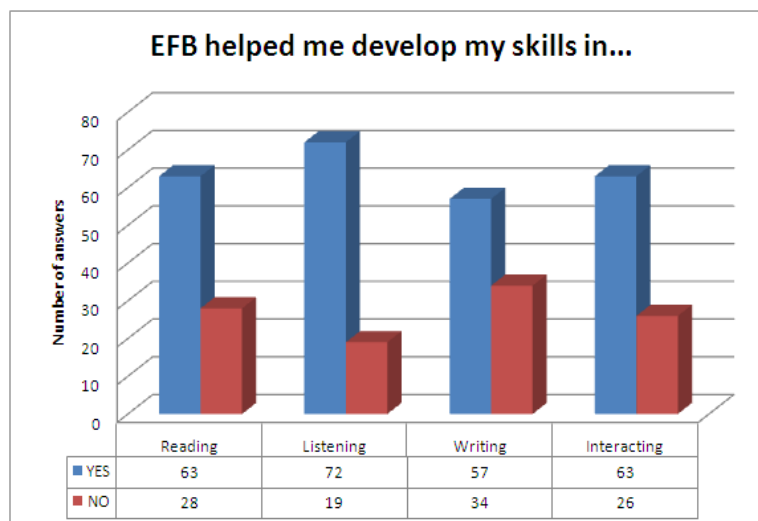


Figure 3 – Skill development

Overall, a wide majority of students consider that completing the tasks has enabled them to develop all four skills. However, it has to be noted that listening comprehension is the skill that the biggest proportion of students (72 %) believe they have developed, while just over half of them (57 %) consider that they have made progress in writing.

4.4. Global experience and suggestions

The global EFB experience was judged positive by 85 % of students and over 90 % of them consider that students with other specialisms could greatly benefit from this type of task as well. In other words, EFB's experimental tasks should be disseminated and generalized to all science students, which can be viewed as a vote of confidence from the students' part.

However, if we examine the answers given to the final open-ended question of the survey, there still seems to be room for improvement:

- some students complained about the linearity of the different tasks which they felt had to be carried out in the preset order: the instructions on that particular point were misunderstood, as there was no obligation to complete the tasks in the order they were presented in, as mentioned above;
- other students suggested that there should be more work on grammar: they felt frustrated about the lack of grammar exercises and would have preferred to “do more grammar”, which is in line with their perceived lack of progress in that field;
- the most frequent complaint is about the lack of systematic error correction in their written productions. This can probably be explained by the fact that the type of feedback they received (micro-tasks as opposed to error correction) went against their habits and expectations, which is a point also noted by Hampel (2010) about the type of feedback provided in her CyberDeutsch module.

These recurrent suggestions have led to several adjustments to EFB: (1) instructions about the order of completion of the different tasks have been made clearer; (2) more work on grammar has been included, especially in the follow up phase during which learners review their interactions; (3) systematic error correction was applied to two of the five written language products (as opposed to one in the original design) in an attempt to make the transition more progressive towards the “feedback on process” approach (personalized extra micro-tasks) which I truly believe to be more efficient. Nevertheless, this point poses the question of the

integration of innovative practices within a traditional context, which is often a painful process.

5. Conclusion

Resistance to change means that we can reject the idea that technology-mediated TBLT can be implemented “just because it can be shown to be effective, ethically responsible and humanly rewarding” (van Lier, 2007, p. 61). Indeed, change has to be supported, which is something sociologists working in the field of organizational change can help us with. Hence, according to Bernoux (2002), “change originates in interaction, which produces micro-adjustments, the only ones that can regulate behaviour in organizations” (p. 97). In other words, it is only through interaction with learners (but also with the institution itself sometimes) that change to their habits can be explained and eventually accepted. This is in line with Bernstein’s “pedagogic rights” theory (2000, p. xx) which deals with issues of power and control, “the sorts of issues that can prevent innovations from taking hold” (van Lier, 2007, p. 50), as long-lasting changes can never be imposed but have to be negotiated to create acceptance.

To end this paper on a more positive note, I quote the feedback given by one of the students in answer to the open-ended question: “I really liked the scenario concept, especially the different brochures and other written products to complete at the end of each scenario, as these are a lot more enjoyable and concrete than, say, writing a 250-word essay” (my translation²).

Even if some work still needs to be done to support change and help learners modify some of their perceptions, overall task reception was positive, as noted above. The development principles illustrated in this paper can thus be applied to other settings.

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² J'ai bien aimé cette idée de scénario, surtout les petites brochures ou autres à effectuer en fin de scénario (beaucoup plus sympa et concret qu'une rédaction de 250 mots par exemple !).

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