Linguistics, procedure and technique in CALL teacher education

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Research in CALL education has identified a series of goals and constraints for technology in language education that need to be taken into account when designing a CALL syllabus. This article presents a theoretical framework for syllabus design based on the identification of three areas of expertise within CALL: linguistic knowledge, procedural skills and technical skills. In the article it is argued that each of these areas can be developed through specific activities and that all areas concur to the ability to integrate the technology in language education.

Keywords: CALL teacher education; syllabus design, learning activities, CALL education framework

Introduction

Not surprisingly, one of the main issues in CALL teacher education research is instruction effectiveness and its impact on the careers of trainee teachers (Egbert, Paulus & Nakamichi, 2002; Hong, 2010; Kessler, 2006). Training effectiveness is generally considered a major factor for technology integration in the language curriculum on the part of language teachers (Kessler, 2006). To support technology integration, then, effective CALL training is expected to provide teachers with tools that are, at the same time, consistent with language pedagogy, useful and affordable in terms of required expertise and economic cost.

CALL education has inherited from CALL research and practice a number of challenges and constraints that must be taken into consideration in order to provide teachers with competence and autonomy to **155**

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interpret and use the technology in their everyday working activity. Understanding the different factors that affect integration (McCarthy, 1999) is one such challenge: the interest of CALL education researchers in approaches such as, for instance, project-oriented instruction (Debski, 2006) or situated learning (Egbert, 2006) shows their concern for the development of the trainees' ability to cope with the complexity of integration. Another important challenge for CALL as a discipline is its ability to produce a pedagogical rationale (Salaberry, 2001; Thomas , Reinders & Warschauer, 2013). This issue is even more delicate in the context of CALL education as teachers – especially in-service teachers – are generally equipped with a body of pedagogical knowledge that needs to be dealt with, as it might not correspond to the CALL pedagogy. Constraints are a particular concern especially as regards CALL practice (Levy & Stockwell, 2006) and this is a warning against the temptation of neglecting the more practical issues; a warning that CALL education generally pays attention to. Beatty (2010), for instance, is concerned with obsolescence of software research, an issue that Kessler (2006) deals with by suggesting that teachers learn *universal skills* rather than a single application. This is a pivotal point, as it hints at the fact that it is transferable, and not simply procedural, skills that teachers need. In other words, the technology grows old very quickly and, if CALL skills are limited to knowing how to operate a piece of software, they are deemed to disappear together with the software; a perspective in line with that of Levy (1997). Kessler (2006) highlights two more issues: lack of technical skills on the part of teachers and motivation. Lack of technical skills is a factor (see also Desjardins & Peters, 2007) whose consequences can be easily guessed. However, as CALL *is* a technical field, measures must be taken to develop such skills as much as possible. Motivation is a quite thornier issue; teachers must be motivated to *learn* technology, but it is all the more true that they need to be motivated to *use* technology, which is what makes them pivotal players in the CALL industry (Hubbard, 2008). CALL trainers should, therefore, pay attention that pedagogical advantages of technology are visible and understandable (Fuchs, 2006). This is not a trivial matter as, it is noted, "the reality remains that the vast majority [of language teachers] may use little more than a computer attached to a projector to display presentation slides" (Thomas, Reinders and Warschauer, 2013:5). These challenges and constraints can indeed constitute an effective guide for syllabus design in that they show what needs to be developed.

The object of this article is to suggest that, at an operational level (i.e. in syllabus design), there are reasons to identify different, albeit connected, areas of expertise in order to provide trainees with solid theoretical/linguistic foundations for CALL practice through focused activities to develop each specific area. The identification of three different areas – linguistic, procedural and technical- and the definition of the related activities constitute a minimal and partial framework for CALL syllabus design. In particular, I argue that technical skills are, at least partially, responsible for the ability to integrate technology and must not be confused with procedural skills. The latter entail the ability to use a particular piece of software/hardware, while the former entail creativity and the ability to use tools to a practical end. In other words, technical skills are professional skills as they allow teachers to effectively integrate technology. The Ancient Greek word *téchne* (τέχνη) means "craftsmanship" or "art" and in classical mythology, the prototype of the artisan is Daedalus, whose name is etymologically connected to the verb *daidallein*, which means "to work cunningly". CALL practitioners are in the same position, as they have to cunningly use and combine linguistic and procedural skills if they want to develop effective activities

that can be integrated in the curriculum. Such ability is technical in the classical meaning of the word, craft, skill and art.

Literature review

A number of works have been devoted to the theory of CALL teacher education that have shaped this field of research. Although syllabus design is not a major theme in the literature, some key points emerge from it that provide support in this sense: the definition of CALL competences, the choice of pedagogical approaches and integration.

Guichon & Hauck (2011) draw on a number of works to identify a set of techno-pedagogical competences for CALL teachers, such as "[h]andle basic tools and applications, and solve simple technical problems", "[d]esign appropriate tasks" and "[a]ssess the potential and limits of technologies for language and culture learning". The authors also define a set of guidelines proposed in the CALL education research that include, for instance, "[developing] basic technical skills that can readily be used instead of training teachers to use a bespoke application or program that might become obsolete quickly" (p.192). Hampel and Stickler (2005) provide an explicit framework for online language teaching that takes into account the connection between networked technology (especially Computer Mediated Communication) and the communicative approach in language education: "[c]ommunicative competence is best taught online when both factors, authentic and meaningful interaction and the necessary pedagogical support, are combined" (p. 312). The proposed model for online language teaching takes the shape of a pyramid in which the most technical skills (e.g. specific competence for the software) constitute the base, while pedagogical ones (e.g. facilitating communicative competence) are at the top. It is worth noticing that creative skills (e.g. creativity and choice) are at the summit of the pyramid, thus indicating their importance in designing effective CALL activities as well as in using and choosing tools and resources.

A second set of works deals with pedagogical approaches to CALL education. Egbert, Paulus and Nakamichi (2002) focus on education effectiveness which should result in teachers using (integrating) the technology in their everyday work. Their research deals with issues that, in the authors' intentions, should guide CALL course design: how teachers learn about technology, how coursework influences classroom activity, what factors influence technology use and how teachers keep themselves up-to-date regarding technology. The authors conclude that CALL education needs "a shift away from isolated coursework in CALL to the development of a sequence of situated technology experiences for teachers" (p. 121). Situated learning, i.e. "the notion that learning knowledge and skills takes place best in contexts close to those in which they will be used" (Hubbard, 2008), has become a recurring theme of CALL education literature and is generally considered as one of the best ways to develop CALL skills (Egbert, 2006; Hanson-Smith, 2006; Kessler & Plakans, 2008). Egbert (2006) provides examples of situated learning, for instance case studies, which "can stimulate discussion and help teacher education students to examine their knowledge, experiences, attitudes and skills without accessing physical classrooms" (pp. 176–177).

Studies on the result of CALL education, that is teachers using technology in their everyday work, generally revolve around the concept of integration. Integration is a complex phenomenon governed by a number of variables (McCarthy, 1999): situated learning can be actually seen as a way to cope with such complexity. Integration is a core issue in the CALL education literature (Arnold & Ducate, 2015; Arnold & Paulus, 2010; Dooly, 2009; Hong, **157**

2010; Oxford & Jung, 2007) and in the CALL literature in general (Levy & Stockwell, 2006). A challenging, yet appealing, perspective on integration is offered by Motteram, Slaouti and Onat-Stelma (2013) who apply the tenets of Activity Theory to CALL education. The authors translate the elements of Engström's (1987) well-known schema, based on Leont'ev (1977) principles, into the actors of CALL practice in order to understand "the different elements of a situation that need to be taken into account (…) [in] the domain of teacher education for CALL" (p.64). This perspective is suitable for the development of integration as it aims to draw, through a sociocultural analysis, "a more significant understanding of what occurs in real situations" (p. 69). Although not a framework, this analysis is intended as a means to fine-tune CALL education to the actuality of CALL practice that is centered not on the subject (the teacher), but around a complex system.

The definition of CALL competences and the study of approaches to CALL education converge into integration, "[t]he ultimate goal of CALL teacher education" (Hong, 2010: 53). As far as concerns the present study integration will be viewed from what the Levy and Stockwell (2006) call "teacher's perspective" (chapter 2), that is the integration of technology into the language curriculum. The issue is discussed at length throughout Levy & Stockwell's book, but it is in chapter 7 (on practice) that the authors address the question of how technology can be successfully integrated in the curriculum. Three different perspectives seem to emerge: a linguistic/pedagogical perspective ("knowing what you want to achieve", i.e. the linguistic goals), a technical/procedural one ("knowing the technical options…") and a more integrated oriented perspective ("…and their pedagogical implications"). The concept of integration, then, seems to imply some procedural knowledge (knowing how to operate a given piece of hardware/software), a linguistic/pedagogical knowledge (knowing how to effectively design tasks) and, finally, a more integrative knowledge (how can both be used to achieve a goal). As seen in this literature review, it is this sort of integrative knowledge that CALL educators seek to develop above all.

Linguistics, procedure and technique

As seen, CALL education research has identified a number of goals and constraints that drive the field. In order to address such issues I propose a framework that distinguishes among linguistic (i.e. pertaining to language education), procedural and technical areas of expertise. I argue that this distinction can help the design and implementation of the CALL syllabus. Moreover, except for Hubbard (2008), who provides a list of processes (e.g. lesson or situated learning) there still seems to be missing in the literature a comprehensive list of teaching techniques for CALL education. A more operative framework could help in defining a taxonomy of possible activities. Below, the three areas are described together with the pertaining activities; by way of example, some activities drawn from the author's experience as CALL educator will be provided.

The first element of this framework is *linguistic knowledge*, which is knowledge/skills in Second Language Acquisition (SLA) and Language Education (LE). This area of expertise is the connection between CALL practices with LE and has a double objective: first, to provide teachers with knowledge of what language learning goals can be achieved through the technology; second, as it shows what can be done with the technology, to foster teachers' motivation into using the technology. Teachers generally possess first-hand experience in such fields already or have received/are receiving training into them. Knowledge in the areas of SLA and LE defines, within CALL, the possible goals of language activities and

helps practitioners maintain activities consistent with language pedagogy and useful for language learning. This does not mean that technology must be "exploited only to carry out activities that [are] already pedagogically accepted" (Garrett, 2009, p. 720); nor does "linguistic" mean that this framework ignores current trends in Second language Teacher Education that posit the "need to move away from [applied linguistics]" (Motteram, Slaouti & Onat-Selma, 2012) towards sociocultural analysis of language education. Whatever its perspective, language education research has language learning as its primary goal and provides with the necessary parameters to determine whether a CALL activity is pedagogically suited or not.

Although SLA and LE are generally not subjects of CALL programs and knowledge in these areas must be taken for granted, CALL trainers are expected to provide teachers with information about the possible benefits of CALL for language learning and in which terms, e.g. by illustrating the benefits of Computer Mediated Communication (CMC). Training in this area, then, also promotes teachers' motivation in using technology as it can provide examples of how language education through technology works and what goals can be achieved through it.

Linguistic knowledge (in CALL) can be developed through a number of activities that help appreciate the role of technology in language education. A possible activity type is case study analysis , e.g. studies that report on language education experiences with technologies; well known examples are the work by Koetter (2003), which shows what language related phenomena (e.g. negotiation) happen during CMC activities, and Thorne (2003) that offers a similar analysis from a sociocultural perspective. By reading case studies trainees gain a deep understanding, albeit theoretical, of the linguistic features of a given CALL task. Case study can be integrated with simulations, which provide teachers with firsthand experience of what happens when a CALL activity is performed. Torsani (2015) presents a case in which some learners took part in a CMC task using a language different form their specialization language (i.e. a language they do not know well). Through an experience similar to that of learners, trainees could better appreciate what happens during a CMC task and compare their experience with what the literature says (e.g. trainees could see that they were negotiating meaning while they were using a language they were not proficient in).

The second area in the framework is *procedural skills*, i.e. how to physically operate hardware and software. Procedural skills constitute an essential area of CALL expertise and must be developed as much as possible as they are one of the most critical issues in CALL education and a main concern for teachers (Kessler, 2006): there can be no solid CALL expertise without procedural skills. Procedural skills are not creative and do not entail any active role on the part of the trainees, who use such skills to build CALL activities. Procedural skills can be a subject in CALL courses, as they constitute, together with SLA, the foundation of CALL.

The most suited activity type to develop procedural skills is the tutorial as it illustrates procedures in a synthetic and clear way. Further, tutorials are easy to follow (especially when accompanied by visual aids as images or video, Torsani, 2014) and can be re-executed as many times as necessary. This is a central point as computer skills cannot be taken for granted and some teachers may need some time to familiarize with a tool while some might already know or be more competent in them. Devoting classroom activities to learn procedural skills, e.g. how to build a cloze test in the Moodle learning environment, might result in a loss of time as some teachers might need more practice. Tutorials can be delivered online, so that learners can follow them at home (ideally with some sort of tutoring online or in the classroom) and classroom time can be devoted to more reflective and **159**

creative activities. Training in this area, therefore, is quite straightforward, provided tutorials are well designed and learners are motivated to learn, and they are if they see practical outcomes in it (linguistic knowledge). Procedural skills are commodities; they are the same across the classroom, they cannot be performed better or worse and are easily assessed: either someone knows the procedures to perform an action or not. In a course held by the author, for instance, trainers were provided with lecture notes containing tutorials on different CALL applications (Moodle for Virtual Learning Environments; AntConc for corpus analysis; Audacity for audio editing etc.). Trainees were required to study and practice the tutorials before the laboratory sessions; a support forum was set up in the Institutional Virtual Learning Environment to provide trainers with assistance during their practice.

The third and final element in the framework is *technical knowledge and skills*, that is, how to combine procedural skills and language acquisition knowledge/skills. This area is both an element of the framework, with its own features and learning activities, and its goal as it aims at developing skills that can help teachers integrate technology, that is the goal of CALL education. With respect to procedural skills, technical knowledge is creative as it requires that teachers advantage of the tools they have at their disposal to produce effective CALL activities.
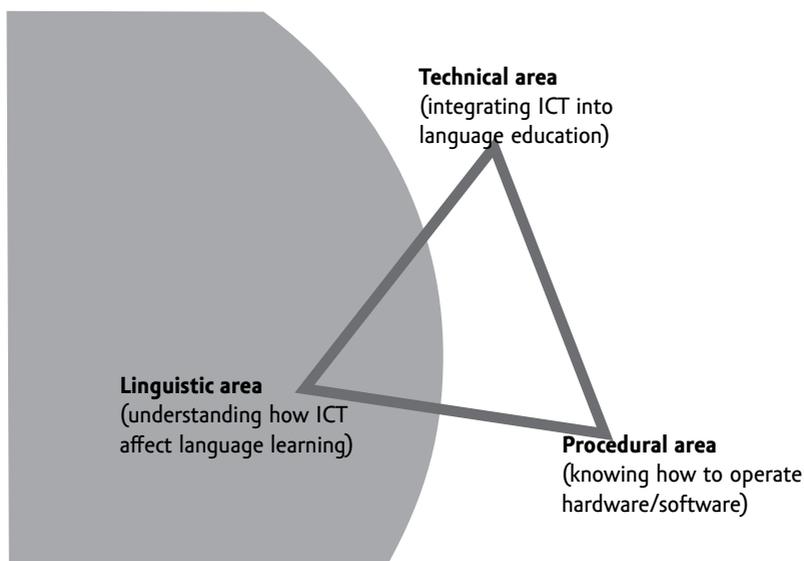

Figure 1. Linguistics, procedure and technique;
the grey area corresponds to teachers' body of knowledge about language education.

Both linguistic and procedural skills are required to work with technology, as the former define the goals and the criteria to assess CALL activities, while the latter define the means. Technical competence is professional competence and is naturally centered around technology affordances: knowing which features can be used, and how, to reach a given goal is a good starting point for CALL pedagogy.

Trainers can develop technical knowledge and skills through a range of activities that foster creativity, namely:

- Converting non-CALL activities. Transforming a non-CALL activity (e.g. an exercise from a book) helps trainees conceptualize the necessary steps of design: choosing the tool, choosing which features to use in order to reach the desired goal, assessing the result etc.;
- Designing the same activity with different tools and notice the differences in the final product. This activity helps trainees understand the impact of software on CALL products;
- Combining and integrating different tools, e.g. using HTML syntax together with a gap filling Hot Potatoes exercise to create a matrix in which each cell contains a yes/no answer (e.g. a text describes the lives of three persons and the reader must understand which features belong to each person). This activity helps trainees understand how to combine different tools;

Figure 2. An example of combining different tools.

- Designing and testing CALL activities, e.g. designing a corpus search task and observe the concordance results to see if they are consistent and useful and understand what to do in case they are not; This activity helps trainees understand, through direct experimentation of their own task, what problems may arise during a certain activity;
- Evaluation tasks, e.g. applying evaluation frameworks to CALL activities;

Conclusion

The growing influence of the technology in language education will probably lead to an increase in the number of CALL courses; syllabus design, then, could become a first-order issue in CALL education research. The presented framework could constitute a contribution to work in this area as it aims at providing some minimal guidance for syllabus design; in particular, it offers a way to contextualize learning activities by defining different area. The **161**

framework, in this sense, is not comprehensive, as it addresses only a portion of the issues pertaining syllabus and some important areas, for instance content (e.g. which tools, which theories etc.), still have to be examined thoroughly.

The framework, however, could be useful as it is based on a number of assumptions that draw on the peculiarities of CALL education. First, CALL education needs to be connected with language education. Obvious as this assumption may seem, it must be noted that research in language education can take the lead and act as a landmark for design and evaluation of CALL tasks but, above all, foster teachers' motivation into using technology. By showing the potential of CALL activities, trainers are building a solid foundation for CALL education, as trainees can understand why they should use technology. Second, by distinguishing between procedure and technique it is implied that technique is much more than simply knowing how to operate a piece of software, but it is a body of professional skills. The distinction between technical and procedural skills seems to be at odds with the literature, which generally considers only technical and pedagogical knowledge and skills (e.g. Hubbard & Levy, 2006); however, such distinction seems to be justified as, at an operative level, the two can be developed in different ways. As seen before, non-interactive parts were delivered for autonomous learning thus leaving more class time for interactive activities. Third, by focusing on learning activities, a pivotal issue in the field is addressed, that is the effectiveness of instruction; as hinted by Chao the idea that teachers "simply transfer and use what was learned some time earlier in a CTE [CALL Teacher Education] class" (2015, p.102), is too simplistic to describe the complexity of integration and, therefore, of CALL education itself, which, as a large body of literature demonstrates (e.g. Chao, 2015; Wong & Benson, 2006), cannot be assessed in the short term. The evaluation of learning activities, then, will prove a hard issue and will probably have to move beyond the single activity towards more general models of assessment that integrate activities within specific syllabuses, contexts and course approaches.

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