CALL Teacher Education
Language Teachers and Technology Integration
Simone Torsani

CALL Teacher Education is a practical resource for teacher trainers who are about
to deal with the challenging and exciting task of preparing language teachers to
integrate technology into their everyday professional practice.

As research yields results that show the solid and growing potential of technology
for language education, Computer Assisted Language Learning has become a rather
common subject in teacher training programmes worldwide. Based on the author's
experience in teacher education, the present book aims at providing trainers with
thorough methodological foundations and practical understanding to design and
implement effective CALL courses. To achieve this goal, the volume collects and
harmonises the different sources that constitute the base-knowledge of CALL Teacher
Education and gradually leads the reader from theory down to practice.

The volume, the first monograph on this subject, offers a comprehensive overview of
CALL Teacher Education, both as an academic discipline and as a practice ambit, and
explores among others the following topics:
• The relationship between technology and language learning;
• The integration of technology into language education;
• Theoretical foundations of CALL teacher training;
• Frameworks and standards for CALL education;
• Approaches and processes;
• CALL training procedures;
• Curriculum design.
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FOREWORD

The use of technology in language education is still fragmentary and peripheral; even the tiny help represented by CDs included with text-books, remains in most cases unused. The diffidence of humanist teachers towards technologies, as shown by the stereotype, is, in many cases, still quite real.

Both teachers and students often limit their digital knowledge to merely consulting Internet pages, attending some community such as Facebook or WhatsApp, and creating a few documents, thus using it in a passive manner, rather than consciously re-elaborating the cognitive and operative implications.

This phenomenon may take on the form of an illiteracy which is, as it were, squinting, in that it keeps one eye partially open on the tools, and the other completely shut on the implicit cognitive aspects, of a meta-linguistic and meta-cognitive nature, which allow the acquisition of knowledge (searching) and of re-elaboration (problem solving) founded on a daily usage of social communication through the Web, which is mediated and facilitated by tablets and smartphones. CALL Teacher Education (CTE) aims primarily at correcting such a squint.

This problem persists (it is not however limited to the humanistic domain, but rather, it concerns all forms of widespread computer-usage in daily social life) in the passage from an implicit passive competence to an explicit and active knowledge. Something akin to the passage from listening to speaking in language learning. Such a passage is related to the ability to rethink teaching activities and procedures within this halo of diffused informatics.

The extension of the visual aspect seems to prevail upon other receptive habits, modifying the relationship between different kinds of intelligence and memory, i.e., between a paradigmatic intelligence, where comprehension was linked with the forming and completion of bi-directional scheme frames, and a multi-reticular, connecting type of intelligence. The importance of the ability to search and connect (connecting intelligence) has now become prevalent. There is now a greater usage of linking knowledge, rather than framing it within a given picture. The relationship between cognitive agents has also changed: the space for learning has become wider with respect to that of the structured and hierarchised education of traditional agents such as school or family.

Generative acquisitional theories such as Krashen’s insist on the basic role of the input (quality/variety and quantity) in activating the learning process. Within this perspective, one of the most diffused requests for second language-learning concerns the usage of authentic materials, for a typical immersion into the language to be learned. The language varieties to be learnt are available in great quantity on the Web, and they are, both as to typology and as to diathesis, almost endlessly varied. We may quote as examples the language-learning platforms available, whether free
or commercial, such as Busuu (www.busuu.com) or LiveMocha (livemocha.com), or special TV sites such as BBC World Service Learning English, which offers video materials, quizzes, guided exercises for English school learning or self-teaching, as well as direct data from the international media (TV or entertainment). Downloading facility (podcasting) allows access to television contents which are diatopically and typologically different. Thus the input becomes quantitatively significant, for it is available any time and any place.

This prerequisite allows learning a live language which is in action and integrated with other types of body-language and interaction. Not a standardised or abstract language, but rather, one that is pluralistic from a sociolinguistic standpoint, respecting the rich variety which characterises language usage.

The linguistic variety indefatigably created by multi-modal globalisation, if on one hand it highlights the inadequacy of text-books and their paper variants, on the other it creates distortions between the moment of creation and usage and that of its specular reproduction in an explicit model.

Permanent innovation is a vital need in language functioning to adapt tool to function, that is, the language to be learnt to the use that will have to be made of it, hence the importance in CTE of “alternatives” to formal instruction. This is a substantial aspect, and didactics may find a help in the Internet and its technologies. This, however, will only occur provided that the Web, from being a static archive of information, become a place for meeting and socialisation, creating a constant contact between the language to be learnt and every-day communicative reality.

“It is within this perspective that we should set the turning point of the Internet as the place for assembling communicative technologies and the languages utilised therein. The extent of their impact on human development is to be measured through the modalities that they themselves create in access to knowledge. The relaunch of technologies and languages, carried out by the Web, allows a “natural” access (this term meaning, here, that often no specific training is required) to all the forms of knowledge presentment (words, texts, images, sounds, multimedia) in real time and to the possibility of translating its semiotic varieties from one channel to another, from one language to another” (Di Sparti, Un computer non calcolatore (“A non-calculating Computer”), 2004, p. 11).

This condition of “seeing” the spoken language turns attention back to the intrinsic multimodality of linguistic interaction, reproducing the conditions of normal language usage (face to face). This is another aspect which is usually not sufficiently stressed: language, as well as being visual code of what is written and auditive code of the spoken, is also a multimedia and multimodal interaction set, with a close connection between phonetic aspects and non-verbal ones, especially in the face and mouth areas. The weave of linguistic and non-verbal codes of the face area, typical of the face-to-face approach, needs to be brought within the learning context.

CALL must follow a parallel route: it cannot be considered a mere tool, but rather, we should utilise its social community texture which makes it possible, working
on the foundation of a cooperation in the primary sense of “doing together”, to use repositories of common knowledge and practices, transferring the solitary Web 1.0 users into virtual communities or into Web 2.0 social networks. There is an evident delay in our intense and daily use of the computer as a communication all-rounder. Thus we have a co-existence of Web-assisted or guided sociality and integrated linguistic abilities.

Web multimedia functions allow the creation of a new kind of class, based upon a synergy between real communication activities and the potentials of virtual communication, integrating languages, representations and sensory recognition. They break the ties of space and time and allow time events to be reproduced in their wholeness, even outside the circumstances of reality, revolutionising the principles of *hic et nunc* in which they took place.

Thus the horizon of language learning takes on a different, almost indefinite spatiality. The language teacher, in a way that is ampler than before, is given by this new reality the task, first and foremost, to train his or her pupil to loosen the reins, consigning him to his own autonomy within infinite cognitive and communicative spaces.

In this work Simone Torsani, on the grounds of his experience as a CALL teacher trainer, sets himself an original task. The route he suggests is twofold: an in-depth study of the traditional language-teaching and technology connection serves, indeed, as a premise for the usage and integration of computer-assisted materials and procedures.

*Antonino Di Sparti*
*University of Palermo*
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INTRODUCTION

The Function of CALL Teacher Education

Many works on Computer Assisted Language Learning (CALL) start out from the assertion that technology has become part of – and has revolutionized – our everyday life and that language education cannot afford to neglect this potential. Commonplace as it may seem, this assertion reveals a plain truth about CALL: technology is often poorly integrated into everyday language teaching (Thomas et al., 2013). This could be quite surprising, also in the light of the vast body of research that has been produced on this subject and of the investments governments and educational institutions make on technology: to quote a famous work on this subject, computers are “oversold and underused” (Cuban, 2001). The impression, then, remains that technology is more a matter of experimentation than a tool in everyday language teaching.

The whole of CALL research literature actually rests on a number of commonplace assumptions (which have nonetheless been proven true by research), for instance: technology constantly changes and it is difficult to keep abreast with it; technology integration in the language classroom is difficult; untrained teachers can become frustrated when technical problems arise; and, of course, CALL practice cannot be independent of language acquisition theory and pedagogy. All these assumptions are true and are rightly entitled to guide any attempt to investigate CALL as a field of practice, research and experimentation. CALL teacher education, which constitutes a subfield of CALL as a discipline, makes no exception and the same assumptions can be found throughout the literature on this subject. This is not surprising, as effective training is the first step towards successful integration and this is what makes Teacher Education such an important area of the sector. It is also not surprising, therefore, that effectiveness of instruction is one of the key issues of research in this field.

The point, then, is what makes CALL training effective. Quite obviously, teaching a subject is generally about transferring knowledge from research to practice, but this does not apply to all cases (for instance, practical domains), and CALL teacher education is one of those cases it does not. If CALL education consisted in transferring knowledge, CALL courses should focus on having teachers acquire notions and learn how to use one or more pieces of software. Things, however, are not so simple and researchers and experts in this domain have been stating this fact ever since the beginning of CALL Teacher Education (e.g. Levy, 1996).

Providing a definition of CALL Teacher Education, then, seems quite straightforward a task: CALL training should aim at developing teachers’ ability to integrate technology. Simple as it may seem, this objective can be a very hard one to attain, due to what in this book I have called the complexity of integration: many
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factors are involved, and each situation is unique in its own individual features. In a research I have recently conducted, I observed different language teachers and noticed that the contexts wherein technology was to be integrated varied greatly. As regards technology, for instance, one had an interactive whiteboard at disposal and Wi-Fi connection in the classroom, while another utterly lacked any sort of equipment. However, technology availability, although one of the primary issues of CALL, is only one side of the matter, as also pedagogical, institutional and personal factors drive integration. If integration is a complex fact, then, CALL training should, as it often does, rely on experiential approaches (such as situated learning), which seem suited to prepare teachers to deal with complex situations.

The function of CALL Teacher Education, therefore, is not only (and not much) about transferring notions and/or learning how to use a piece of software: its main objective is to develop in teachers the knowledge of the technological options available and the ability to combine them with their knowledge of language teaching. This is why I have chosen to describe teachers skilled with technology and integration through the mythological character of Daedalus, the craftsman whose name means “well wrought” or “artfully combined”; in other words, Daedalus was skilled in combining the components at his disposal to produce useful objects.

I have worked many years now as teacher trainer and I may well say that this research began when I met my first class. Working and discussing with language teachers I tried to understand their doubts and expectations about CALL, their professional needs and the way they make sense of technology in their work. Most of all, I learned that integration of technology does not depend on age or gender, nor is it too dependent on institutional policies towards CALL; the key factor is understanding technology potential in a way that is comprehensible and viable for everyday work. There is, in fact, an economy of CALL usage that might work differently for university researchers and for language teachers. The former, as CALL researchers, use technology almost naturally in their work and share a philosophy of experimentation by which this use is fully justified, even in the light of a non-brilliant balance between cost/time and results. The latter, on the contrary, are much more prone to evaluate carefully such balance and might become suspicious when faced with complex and costly experimentations.

By seeing technology through the eyes of language teachers, I envisaged the ideal line dividing neglect of technology from its integration. This work aims at helping teacher trainers get their trainees to step across that line and become proficient users of technology in their everyday work.
CALL AND CALL EDUCATION IN THE WORDS OF RESEARCHERS

The future of CALL, I would argue, is closely tied to the future of language teacher education because language teachers are the pivotal players: they select the tools to support their teaching and determine what CALL applications language learners are exposed to and how learners use them. (Hubbard, 2008)

Considering the computer as a tool then puts it directly between the user and some part of an intended task, much as the hammer is between the user and the nail. This requires the user to understand the specific manner in which the tool is to be used and some basic understanding of how it works. (Desjardins & Peters, 2007)

(...) coursework alone, devoid of the opportunities to practice, apply, and see evidence of student improvement, may lead to technology learning but not necessarily to its use. (Egbert, Paulus, & Nakamichi, 2002)

We need constantly to remind ourselves and those outside the field that “CALL” is not shorthand for “the use of technology” but designates a dynamic complex in which technology, theory, and pedagogy are inseparably interwoven. (Garrett, 2009)

(...) it is clear from the literature that teachers who can analyze and handle the many different situations that may arise in their technology-enhanced ELS classroom will be more effective in helping their students learn than those without such preparation. (Egbert, 2006)

For personal reasons, I was able to get close to the didactic usage of computers over twenty years ago, and the first task I set myself was that of fighting off attempts to utilise and avant-garde technology (the one that took Man on the Moon and introduced him into the third millennium- in both cases with some kind of thrill) to then teach languages with amply outdated methods. (Porcelli, 2004)

(...) CALL has frequently been regarded in many ways as a techno-centric discipline (...), where some feel, albeit usually mistakenly, that new technologies should be able to do anything they need them to do in their teaching contexts. (Stockwell, 2009)

(...) one criterion of CALL’s successful integration into language learning will be that it ceases to exist as a separate concept and field for discussion. CALL practitioners should be aiming at their own extinction. (Bax, 2003)
Indeed, over the past years such a shift in education from a transmission approach to a more learner-centred approach has been taking place, a shift that in computer assisted language learning (CALL) is reflected, for example, by a move from using the computer as a grammar teaching tool to computer-mediated communication (CMC) between students and between students and teachers. (Hampel, 2009)

Language teachers and learners operate within a set of interrelated constraints. (…) To conceptualize language teaching or CALL without such constraints and to assume “ideal conditions” – as is often the case with theoretically derived models of language teaching and learning – is to miss the point as far as successful planning and implementation is concerned in real education settings. (Hubbard & Levy, 2006)
CHAPTER OVERVIEW

This first chapter offers an overview of the study branch dealing with the application of technologies to language learning and teaching.

After a period of changes, which coincided with the diffusion, in language pedagogy, of communicative approaches to which it seemed to have little to offer, CALL seems now to have found a primary role in Language Teaching. This reintegration, which is, among other things, the result of the convergence between Internet technologies and social learning theories, has implied profound changes within this domain, which appears, today, to be different with respect to its beginnings.

Different and, for some aspects, contradictory. Whilst there has been a remarkable broadening, in research, of the language teaching component, as opposed to the more essentially technical one, a simultaneous re-evaluation of technology itself and its potentials in influencing communication may also be observed. Indeed, technology is even seen as a domain, indeed not at all secondary nowadays, of communication itself. The growing integration of technologies in language pedagogy coincided with a modification within the traditional frameworks of usage and analysis of the technologies themselves. Indeed, the greater autonomy of learners requires not only a knowledge of the state of the art in this field, of its lines of development and potentials for linguistic education, but also the development of organising and supporting skills.

1.1 DEFINITION OF COMPUTER ASSISTED LANGUAGE LEARNING

Computer Assisted Language Learning (hence the acronym CALL), as a field for research and practice, has rather a wide action range and, consequently, offers various perspectives for analysis. It is a natural consequence of such variety that it is quite hard to establish a univocal and shared definition of this subject: indeed the manifold, more or less explicit, proposed definitions seem to refer to rather broad facts, whose individual features are elusive.

There are two usually quoted definitions. The first is the one proposed by Levy, according to whom CALL is understood to be “the search for and study of
applications of the computer in language teaching and learning” (Levy, 1997: 1), a definition which may be considered “broad” in that it seems to extend the applications of technologies to all the facts concerning language pedagogy, such as for instance language testing or content management. This broad perspective may be found in the work by Levy and Stockwell (2006), where, as regards CALL materials, the proffered definition includes “tasks, software, courseware, Web sites, online courses, programs, packages, and learning environments” (p. 3); it seems no coincidence that the book deals with the various options available to those who intend to use technologies in language learning. The other, rather wide-spread definition is that proposed by Beatty, who considers CALL “any process in which a learner uses a computer and, as a result, improves his or her language” (2010: 1); this being a perspective which seems more restricted and concentrated solely upon those activities which have a direct impact upon a learner’s linguistic system. Whereas the first definition seems to focus upon technologies application, the second one seems to concentrate on the learning process which takes place through technologies.

If the former definition is to be accepted, various uses of computers in teaching ought to be taken into consideration and examined: for instance, among others, linguistic activities, testing, tools for research on learning, applications for the creation and organisation of contents, and also access to resources. A very vast field of action, indeed. The second definition, to the contrary, seems to be limited solely to learning, thence to linguistic activities and tasks, therefore seeing things from a more circumscribed standpoint. The choice of tools has obvious implications as regards the content of the CALL curriculum.

The discrepancy between these two definitions leads us back to another feature of CALL as a field; that is, its double nature of academic discipline on the one hand, and professional tool on the other; these two souls not always being compatible. From a broader perspective, which is also the most widespread, CALL in fact includes elements which are outside the domain of scientific research on language teaching, but which are professionalising, for instance good practices; but it also includes elements which are typical of research, albeit not immediately viable within a professional environment, such as the history of this study branch.

In parallel with the difficulty to produce a unitary definition of this sector, one notices the abundance of acronyms, each one indicating a different focus: among these, Technology Enhanced Language Learning (TELL, where the focus is on the usage of different technologies, in addition to the computer, such as videos and audio-texts; Beatty, 2010), Web Enhanced Language Learning (focus on Internet technologies) and Mobile-Assisted Language Learning (MALL, focus on usage of mobile devices). Other acronyms, such as Computer Assisted Language Testing (CAT), refer to specific aspects among which, precisely, computer-supported testing. Anyhow, all these abbreviations usually refer to the denomination which is now accepted internationally for this branch of research, i.e. Computer Assisted Language Learning; this nomenclature, however, is not limited solely to the computer, but it indicates all the range of digital technologies that can be applied to language
education. As CALL is about technology, then, we might adopt the broad definition of this term provided by the TESOL Technology Standards Framework (p. 3):

The term technology in this document refers to the use of systems that rely on computer chips, digital applications, and networks in all of their forms. These systems are not limited to the commonly recognized desktop and laptop computers: Almost all electronic devices these days include an embedded computer chip of some sort (DVD players, data projectors, interactive whiteboards, etc.). Mobile devices that employ a computer at their core (cell phones, personal digital assistants [PDAs], MP3 players, etc.) will undoubtedly occupy a more central role in language teaching and learning in the years to come.

Levy and Hubbard (2005) made an attempt to call an end to the question of denomination in a work bearing the significant title *Why call CALL “CALL”?*, in which the problem is revealed to go deeper than it might at first appear. After all, the authors affirm, the usage of names and acronyms within a scientific field always represents a struggle for power among study branches (and sometimes also within study branches). We find an example of this in Second Language Acquisition (SLA) which, in fact, a denomination subsuming different studies and fields, such as language teaching, although the latter is not mentioned within it. The authors propose three justifications for using the term CALL and, indirectly, for the study branch itself. The first justification is in the complex nature of language and its learning/teaching: the authors argue in favour of the uniqueness of language as a didactic object and, consequently, of its uniqueness as regards technology applied to its learning/teaching. The second argument, instead, examines the technological aspect. The authors start from the historical relationship which links various technologies to language (for example, writing), in order to define a pattern within which the computer mediates between the subject and the learning goals; in other words, CALL as a study branch deals with the particular relationship which makes technologies an original, not a neutral, element in the relationship between the individual and language learning. Technology, then, is something which offers an added value. It is not neutral, in that the tool chosen for usage will influence the activity (thence the learning), and it is original in that such an influence depends on the tool’s affordances. This statement seems to deny the idea that CALL may be reduced to the mere application of technologies to teaching: the latter being a notion which, for years, has reduced this field to a secondary role in linguistic education. Garrett was later to found upon this argument, i.e. the uniqueness of the relationship between technology and language learning, her new definition (2009) of the relation among the various components of CALL. The third reason to use the acronym CALL is that it is the most wide-spread on the planet. This argument should be carefully considered, for it implies the global nature of CALL as a study branch, as opposed to research on Second Language, which often refers to a specific language. The field of technologies for language learning is, when all
is said and done, a composite domain, into which different interests and analysis perspectives converge; it is, therefore, possible to picture research in this field as an atom: the nucleus is formed by technologies for learning proper, in the shape of technology-assisted language activities, and the mobile electrons represent applications for other teaching-related elements: testing, systems for contents output and organisation, software applications development, analysis of interactions, experimentation on emerging technologies, to quote but a few.

Such a wide range of perspectives begs various questions relating to the nature of CALL as a study branch, which will be analysed in depth in the rest of this chapter.

1.2 HISTORICAL DEVELOPMENT OF CALL

Although there is no monographic work on the history of CALL, nearly all wide-range studies on technologies devote one section to this subject, almost as though to suggest that writing its own history might help CALL to define itself with more certainty. And, quite surprisingly, the various proposed histories often differ as to manners and contents.

Beatty (2010) carries out a work of archaeology aimed at collecting that which can be saved from the rapid obsolescence typical of this domain (a Leitmotiv of his whole book). Chapelle (2001) writes that which is perhaps the most linguistic of all histories, where for each technological innovation she traces parallels with the research and language-teaching practice of the same period. For example, she describes this domain in the period of Krashen’s maximum influence (in the 80s); during those years the diffusion of computers allowed the design and delivery of language activities which were evaluated in the light of the scholar’s theories: reconstruction activities, for example, were judged to be “sufficiently ‘communicative’” (Chapelle, 2001: 10). Finally, Davies Otto and Rüschoff (2013) give ample space to the technological aspect and provide a detailed description of various programmes and facilities.

To these extended histories one should associate what Decloque (2000) calls “interpretive histories”. These are synthetic and schematic accounts, the aim of which is to define broad categories around which to set the study field. These categories are historical/language-didactic stages (as in Warschauer & Healey, 1998), approaches to the use of technologies (as in Bax, 2003) or historical/technological stages (as in Davies et al., 2012). The best-known and most quoted among these is the first one (Warschauer & Healey, 1998, second edition of a similar history proposed by Warschauer in 1996), identifying three historical phases:

1. Behaviourist (structuralist) phase. It indicates the period ranging approximately from the 50s to the 70s. It is characterised by behaviourist and structural approaches in Language Teaching, making ample use of drill-type language exercises focused on language structures and grammatical accuracy. Such exercises are very easy to design from a technical point of view,
2. **Communicative phase.** It refers to the period from the 70s to the 90s. It is characterised by communicative approaches in Language Teaching and by a range of heterogeneous informatic applications. The authors point out (a) structural exercises which, however, still focus on language structure rather than language use, (b) linguistic manipulation exercises (such as reconstruction) and (c) computer-based activities apt to stimulate or guide learners’ interaction (in this sense the computer is mentioned as a stimulus).

3. **Integrative phase.** It refers to the period from the 90s onward. CALL is still characterised by communicative approaches, but these are more oriented towards the social and pragmatic aspects of language, as in the *task-based* approach, allowing the integration of the various linguistic abilities. Furthermore, they increasingly integrate technologies with language learning. In this approach the Internet and multimedia play an important role.

This model was criticised by Bax (2003). The scholar, who is renown in this field for having introduced the concept of *normalisation*, an ideal future state in which technologies will be *naturally* integrated into language education,²¹ rewrote a history of CALL distinguishing among approaches rather than chronological phases. In Bax’s paradigm a distinction is made among *restricted*, *open* and *integrated* CALL. In the first approach the computer is not integrated into the syllabus, and a structural model of languages is assumed, in which the interaction takes place between man and machine and is limited to activities of the stimulus/reaction type. Open CALL, the second approach, includes a manifold range of activities (e.g. games and simulations) which envisage more open interactions, both with the computer and with other subjects. Finally, in integrated CALL, technologies are integrated within the syllabus, namely by means of communicative activities such as, precisely, Computer Mediated Communication or E-mails. It is important to note that in integrated/normalised CALL computer activities are a *natural part* of language teaching and there is no laboratory work: software applications are used sporadically and only when they are actually necessary.

In Davies et al. (2012), on the documentation site *ict4lt.org*, proposed another pattern distinguishing among *stupid CALL*, *multimedia CALL* and *Net CALL*. The proposed pattern has rather a technical approach; however, it does offer the advantage of pointing out clearly the basic role of the Internet in present-day developments of this field.²²

In Torsani (2014), I hypothesized an interpretation of the history of this sector based not on technical or pedagogical aspects, but rather, on the relationship and, above all, on the integration between technologies and language teaching.

1. **Structural/behaviouristic phase.** The leading language-teaching approaches are structural, and teaching techniques are represented by *pattern drill* exercises. Within such a context technologies have a clear-cut and well defined role, for the creation of structural exercises is simple for a computer, and automatic
instructi

23 is convenient and effective. Salaberry (2001), who highlights this symbiosis between didactic approach and technologies, offers an interesting insight into how the scientific literature at the time had welcomed such technologies with enthusiasm, in particular the linguistic lab: “a tool which might have been invented just for the language class, so suitable is it for language learning” (Lorge, 1964, in Salaberry, 2001: 43).

2. **Crisis and transformation of CALL.** With the diffusion of communicative approaches, the role of technology appears to be less definite than in the preceding phase, since the implementation of communicative activities through technologies (at least those of the time), although not impossible, requires an ample work of redefinition of the sector itself. Crisis, therefore, does not mean that technologies disappeared from language teaching or that researchers lost interest in them, but rather, it indicates the birth of a research domain which struggles to establish a relationship with language pedagogy. It was a period of great experimentation: the 80s saw important experiments with concordancer (Johns, 2002), artificial intelligence, games etc. – all domains which are still productive now. This was therefore a period of great creativity, although it was not always tied up to the reference literature on Language Teaching (Garrett, 2009).

3. **Reintegration of CALL.** The leading language-teaching approach is still predominantly communicative; the cognitive/interactionist research trend is accompanied by the socio-cultural one: both are based on interaction and communication among people. The growing diffusion of the Internet offers easy, affordable and pedagogy-consistent tools for language teaching, for it concentrates on content sharing and interaction, e.g. through Computer Mediated Communication. This is not to say that the field has ever coincided with Internet Technologies, but rather that the Internet, CMC and mobile technologies (together with multimedia), have played a central role in providing a sound pedagogical justification for the field. CMC, in particular, seems to be linguistically and pedagogically thorough, as it offers the opportunity to implement and observe many facts that research has focused on in the last decades. This phase coincides, I would argue, with a general reconceptualisation of CALL from field of research and experimentation to a field of practice. such reconceptualisation could explain some facts that occur in the literature of this time, namely the definition of historical phases (e.g. Warshcuauer & Healey, 1998) or the focus on integration (e.g. McCarthy, 1999).

Whatever interpretation one wants to give of the historic development of this sector, the present-day scene is rather clear: the communicative approach maintains a leading role in language teaching (even if it is accompanied by other approaches that have emerged in the last decades), and it constitutes the testing ground for technology (Thomas, Reinder, & Warschauer, 2013). Technology is used, in such a context, as a means of communication (for example, forums for asynchronous
distance communication), as a tool for task design, as a contents source or as a tool for contents production.

There seems to be a break point in CALL history, which somehow marks a shift in the field. Around the mid 90s, while technology was becoming more widespread and powerful, CALL was on its way to cease to be a specialists field. Chapelle (2001: 1) recalls her personal experience about the way technology is perceived by language teachers from the 80s through the 90s:

At the annual TESOL convention in San Francisco in 1980, interested and curious participants attended Joan Jamieson’s and my workshop introducing the use of computer software for teaching English as a second language (…). As newcomers to the profession, we had probably accepted uncritically the fact that the computer was used for teaching in the ESL program where we worked. We were therefore intrigued by questions from the audience about whether the computer should be used for language teaching. Various forms of this question – whether or not computers should be used for language teaching – were echoed throughout the following decade, but during the 1990s the question gradually changed from ‘Should the computer be used in second language teaching?’ to ‘How can the computer best be used in language teaching?’

This shift forces researchers to redefine the field and its features. It is at this moment that the concept of integration becomes crucial, as integration is the answer to the question about how technology is to be used.

1.3 CALL TODAY

Defining the state of the art in technologies for second language teaching is on the whole an easy task, for the broad lines of research are clear enough; what they reveal, however, is a domain which is quite different from what one might expect.

A point of departure can be spotted in the widespread circulation of Internet technologies and their relationship, already mentioned above, with constructivist and socio-constructivist theories (Thomas et al., 2013). The first version of history according to Warschauer appeared in 1996: at the end of the century he proposed a sum-up, in view of what seemed to be an imminent change in the sector, and quoted two possible development paths: multimediality and the Internet:

Computer Mediated Communication (CMC), which has existed in primitive form since the 1960s but has only became wide-spread in the last five years, is probably the single computer application to date with the greatest impact on language teaching. (Warschauer, 1996: 11)

This forecast, as we saw, turned out to be true; indeed, today a considerable part of both practice and research in this sector is oriented towards Internet-communication.
Since technology developments are quite well-known, suffice it here to summarize some crucial passages:

1. Second half of the 90s – Diffusion of the Internet: during this stage, connectivity is limited both in power and number of users; connection is irregular and limited in time;
2. Early 2000s – Diffusion of wide-band connectivity: connection with computers to the net is continued; eclectic development of applications (Ajax framework) which, merging the diverse potentialities of the various languages, allows the realisation of rich and viable net applications; birth and diffusion of social networks;
3. Early 2010s – Diffusion of mobile devices (smartphones) – connection is continuous and mobile; reinforcement of social networks (visited through mobile devices); “apps” development, applications having but few functions and oriented towards a specific usage (Stockwell, 2013), in particular for the realisation of multi-media contents, which can be shared also through social networks.

And yet it would be a mistake to trace back the whole study branch solely to Internet technologies, for this domain also includes other fields of practice and development. It is, however, undeniable that the diffusion of the Internet gave a great propelling drive to this sector, and that it touches many of its subfields, to the extent that CALL today, as has been said more than once, is no longer merely grounds for experimentation, but rather, its space for intervening in language learning is becoming wider and wider.

As Loewen and Reinders remind (2011: 38):

[An] important strand of CMC research has attempted to apply SLA theories and methodologies, for example by investigating focus on form and negotiation of meaning in online interaction. Initially, studies of CMC were concerned with the characteristics of L2 learner language in online environments; however, research has expanded to investigate how online interaction can contribute to L2 development. In this way CMC is probably the area of computer-assisted language learning that has made the greatest contribution to SLA as a field. At a practical level CMC is said to make an important contribution to L2 learning by allowing access to the target language community and opportunities for practice.

Computer-mediated communication (CMC) anyhow remains, as we have seen, among the great protagonists of this sector, and research in this field followed three different directions which are, however, tied to one another, according to Meskill and Quah (2013):

1. The analysis of learning environments, focusing on the possibilities offered by interaction and on the way such possibilities influence communication. Different theories imply focusing on different technologies and analyses. Sauro and Smith
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(2010), for example, analyse chat room transcriptions in order to observe how this tool’s individual features, in particular the usage of available time to plan one’s productions, influence the individuals’ monitoring of their own productions.

2. The analysis of the social/affective dimensions of online communication includes a range of studies which are variously focused, but may be identified through the concept of “social change” (a social turn, Block, 2003) in language teaching. This area includes studies on building Internet communities (Thorne, Black, & Sykes, 2009), studies on cultural identities in network exchanges (e.g. Harrison & Thomas, 2009) or, finally, studies on motivation in Network learning (e.g. Ushida, 2005). We will not, here, analyse in depth those subjects which have already been dealt with by an authoritative and ample literature, to which we refer the reader. As will be seen further on, the didactics of digital media is often less focused on technical issues and more on linguistic/pedagogic ones: therefore qualitative analysis is an excellent method to discover the social potentials of these tools.

3. The analysis of educational processes, unlike that of the affective dimension, concentrates on planning and carrying out linguistic activities that are more effective with respect to available tools. Dekhin et al. (2008), for instance, concentrate on peer tutoring.

The diffusion of this strong nucleus, made up of network technology on one side, and social and interactionist approaches on the other, moved in tandem with a shift in research perspective for CALL, which nowadays makes ample use of qualitative methods (Thomas et al., 2013). In recent years, many analyses have adopted a sociocultural perspective, especially in the area of computer Mediated Communication (CMC). Exemplary works in that sense are provided by O’Dowd on telecollaboration (2005), who investigates how different sociocultural and institutional contexts influence linguistic exchanges between Spain and the United States, or Peterson (2009) who focuses on interaction in CMC synchronous tasks. These works show a rather different perspective from that which emerges from studies like the one by Pellettieri (2000), which associates synchronous communication to the possibility of negotiating meaning, or the even more traditional analyses on the use of a given tool to develop one certain linguistic skill (e.g. Cobb, 1999 on concordancing for the development of vocabulary). One should not, however, be tempted to draw a sharp distinction between two opposite stances: the study by Peterson, for instance, shows how an interactionist perspective can be combined with a sociocultural one.

However, in spite of various research orientations, it is important to observe how in this domain the pedagogical aspect has gained more and more importance; which might be interpreted as a sign of the fact that this sector has grown out of its experimental condition, to take on an active part in research on language learning (Chapelle, 2001; Loewen & Reinders, 2011). This is, paradoxically, precisely due to the greater presence of technology in people’s everyday life, as shown, for instance, by the fact that CMC is fully entitled to be called a form of communication (Garrett, 2009).
It is upon a total integration of technologies into everyday life and education that Bax, in 2003, postulated the disappearance of computer-assisted language learning as a discipline, and the normalisation of technologies in language teaching.

1.4 RELATED DISCIPLINES AND COMPONENTS

The definition of disciplines related to CALL used to be quite common in the specialised literature, but nowadays, this subject seems to be a less urgent question for research. It is, however, important to mention the subject here in order to recall the inter-disciplinary nature of this study branch (Levy, 1997); this being a trait in common with language learning research, and one which strongly influences the great theme of CALL as a study branch: integration. Most of all, discussion on the related disciplines of the field seems particularly useful for CALL teacher education as it provides a first overview of the different competences CALL practitioners may need, as well as research fields they could refer to.

Both Levy (1997) and Chapelle (2001) speak of related disciplines, i.e. “disciplines that made significant contributions to CASLA”, i.e. Computer Applications in Second Language Acquisition (a term/concept broader than CALL).

The proposed models differ from one another, and such differences among the two scholars’ positions seem due to a whole set of factors. The first element is the width of this sector: more ample definitions tend to include more disciplines, as in Levy’s case (1997: 49); this author draws a list of about twenty research fields, including education psychology, linguistics and automatic translation. The author, however, provides and concentrates on a more succinct scheme of groups of disciplines, which includes (1) Artificial Intelligence, (2) Human-Computer Interaction, (3) Psychology, (4) Instructional Technology and Design and (5) Applied Linguistics and Computational Linguistics.

Also the author’s approach has an influence on the choice of disciplines: Chapelle’s work (2001) bears a strong linguistic imprint and, therefore, includes: Educational Technology (akin to Levy’s Instructional Technology and Design), Artificial Intelligence, Computational Linguistics, Computer Supported Collaborative Learning (CSCL) and a Corpus (on which methods such as Data-driven learning are based) and Computer-assisted Assessment. In Chapelle’s list CSCL seems to encompass Computer Mediated Communication, a term which was not popular in CALL research at the time, although it certainly was an issue.

Finally (and quite obviously), also the historical period influences the individuation of disciplines which contribute to CALL: the diffusion of internet technology and social networking services has augmented the importance of social sciences, such as sociology (Thomas et al., 2013) at the expense of fields such as Artificial Intelligence.

Again, I would argue that the classification of related disciplines is a direct consequence of the re-conceptualisation of the field in the 1990s. It was perhaps because technology was emerging as a possible tool for language teachers, that
researchers tried to give CALL an identity by defining related disciplines and attempted to draw scientific coordinates for the field. The question, together with other ones, seems to be less urgent now that researchers, many of whom are language teachers, have successfully managed to integrate technology in their everyday work and, above all, research has generally defined its arguments, methods and terminology.

As the field now has acquired a more defined aspect, it seems no longer necessary to look outside it in order to define a horizon for research and practice. The pattern proposed by Garrett (2009), although it is not intended as a reference framework, nor as a model proper and, above all, it does not focus on actual study branches, is indeed rather solid (albeit quite generic) and reduces drastically the number of elements: the author distinguishes among technology, theory (of language learning) and pedagogy (language teaching). The reciprocal interaction of these elements sets the lines of a framework within which the various elements influence one another. Garrett’s work of 2009 is a revision of a previous contribution, dated 1991, which already mentioned these three elements; therefore, I am not envisaging this model as an evolution of the previously quoted works, but rather as a model which is now sufficient to circumscribe the field and its constructs.

The author’s position originates, in this case also, from the observation of the historical development of the sector of which she provides an insight of great value. In fact this scholar observes how, over a period we can roughly identify with the first stage of the mass diffusion of computers (the 80s), the enthusiasm for technologies had led to their indiscriminate use; that is, to their being used regardless of the theory and practice of language learning. The protagonists of this first stage were often teachers impassioned with technology, whose preparation was, however, sometimes amateur; they prepared their own materials, sometimes even going as far as to programme software. For this reason, such materials were products which seemed so distant from the mainstream language teaching, dominated by communicative approaches, as to drive those dealing with this field to an actual call to order, which subordinated technologies only to the recognised practices acknowledged for language pedagogy (Garret, 2009: 720):

Early enthusiasm for each technological advance in the capacities of those first limited microcomputers sometimes allowed gadgetry to drive pedagogy; then, reacting against experimentation with technology for its own sake, teachers insisted that it should be exploited only to carry out activities that were already pedagogically accepted.

Such an inversion had the effect of pulling down to size the technological aspect as a research field, subordinating technologies to research on language teaching. As we have seen, however, with the advent of the Internet simple and economic tools became available, through which it is possible to communicate, thus implementing the most important activity in modern approaches, human-to-human interaction (for instance through tasks). Garret’s pattern may then be extended to the whole sector, if
we imagine it as a single, and therefore inter-disciplinary, interaction space, among the elements considered: the tool offers a range of potentials (technology) which may be exploited through linguistic activities (pedagogy) in order to stimulate the phenomena which are typical of linguistic appropriation (theory). Technology, in its turn, can give rise to original phenomena (the various communication tools, for instance, originate new ways of communication) and thus influence theory.

Garrett’s work is essential for this field, in that it illustrates the historical moments in which the relationship between technology and Language Education, i.e. integration, changes: at first technologies were somehow put aside, but then they were able to regain a role in language teaching.

1.5 RESEARCH THEMES

Just by glancing at this sector we can see a multifarious overview, which needs explaining in order to understand its complex character. The categories which follow are not precise, nor do they exhaust the richness of research, but they intend to give a brief overview of the themes in the literature.

This topic is also of interest to trainee teachers, who might ignore the breadth of CALL research and the themes they could deal with.

A considerable part of present-day research deals with Computer Mediated Communication (CMC), which studies communication through different kinds of tools (Lamy & Hampel, 2007), synchronous (chat room, instant messaging) or asynchronous (forums). Research in this area deals with describing the impact of the various platforms, including the (once) emerging ones (for example blogs were considered emerging by Godwin-Jones, 2008), on communication. Further areas of research refer to this trend: tele-collaboration (O’Dowd, 2013), language learning through social networks and media (Meskill & Quah, 2013), as well as the many cases of distance language teaching through tasks (Smith, 2005) and pedagogic/language teaching approaches inspired by communicative and interactionist theories.

Other research fields, still related to CMC by the fact of exploiting connectivity, but having their own corpus of research, have emerged with time. Online language teaching deals with defining problems linked up with long-distance training applied to languages (Lamy, 2013). The research on virtual worlds (Sadler & Dooly, 2013) studies the possible uses of such environments, which are indeed promising, especially as concerns the affective dimension of language learning. This domain sometimes leads to, but does not coincide with, the research on video-games in language learning (e.g. games on the Internet). A field which is still quite experimental, but expanding, is Mobile Assisted Language Learning (MALL, Stockwell, 2013), which deals precisely with mobile technology, for example Smartphones.

An equally great part, but one with a longer tradition, is that which studies design (Levy & Stockwell, 2006). Design, an ample and manifold area includes both designing of materials (e.g. with a programme), and single language tasks to
be carried out at the computer; and finally, even whole courses (e.g. long-distance courses).

At a more theoretical and linguistic level, there are researches seeking a definition of historical frameworks (Bax, 2003; Davies et al., 2013; Warschauer & Healey, 1998), theoretical and evaluative frameworks (Chapelle, 2001; Compton, 2009; Hubbard, 1988), frameworks defining the competences necessary for Teaching languages with technology (Dooley, 2010; Hampel & Stickler, 2005; Guichon & Hauck, 2011). These are broader researches, aimed at offering an overview of this sector and of some important works, for they connect, at a theoretical and linguistic level, CALL as a study branch to the vaster literature of Language Teacher Education.

There is a more pedagogical approach to a range of domains investigating the possible uses of technologies with respect to specific interests and/or didactic orientations. Such is the case, among others, of the research on Task-based Learning, which exploits technologies (for instance through simulations) within real tasks, that is, ones which are realised according to the approach principles (Thomas, 2013). Another promising ambit is that of research on technologies as a tool to develop autonomous learning, also in function of lifelong learning (Garrett, 2009).

The more technological tradition of this sector is still vital today and has a first and foremost role in offering research new tools on which to work. A first example is that of emerging technologies, an area which deals with introducing into this sector technologies which are new or, anyhow, have not yet been exploited in practice: most of these works concern hypotheses on the possible uses of such technologies within a linguistic ambit. A domain which used to be leading in research (Chapelle, 2001) and is, anyhow, still important today, is that linked to artificial intelligence, denominated Intelligent Computer Assisted Language Learning; although its fame has been shadowed by more showy phenomena (such as CMC) this sector is productive and important steps forward have been taken thanks to developments in computational linguistics and in intelligent systems as a whole, for example in the field of automatic text correction (Schultze & Heift, 2013). This is an ambit which, outside the specialists’ circle, is sometimes seen with a degree of suspicion, as being too technical or not linguistic or pedagogic enough; a fate which it actually shares with CALL itself as a study branch (Hubbard, 2009).

Finally, there are some specific ambits which fall into none of the previous categories, but rather, form cases for themselves, not because they are marginal, but because of their more general level, in spite of having a circumscribed size and defined individual features. The research on Computer-Assisted Second Language Teaching deals with training future teachers for technologies; that on testing deals with the use of technologies to support ascertaining and evaluation.

1.6 ROLES

Research in CALL has also focused on a reflection on the definition of roles assumed by the three main actors of the system: technologies, learner and teacher.
(Gruba, 2004). The conclusions, which may be drawn from reflections on the historic evolution of such roles, are rather predictable in the light of the historical development of CALL. The development of this sector has coincided with a growing “loss of power” on the computer’s part in favour of learners, who today utilise technological tools in an active manner, in order to work and communicate, rather than as machines that programme and check their learning.

The computer’s role has been interpreted by research according to three different perspectives. The first one is that of motivation, which is a primary factor in language learning and considered also, on a more general plane, as one of the most important affective factors; the literature has a long tradition on this. Traditional arguments in favour of the motivational value of technologies are: the wish to experiment new tools; the individualising nature of computer-supported education; a greater control on the learner’s part and the possibility of immediate feedback (Warshauer, 1996). Today such arguments, although fundamentally true, are mostly considered outdated, and Warschauer himself already stressed the need, not so much to base them on more solid data, as to update them according to emerging technologies, which contribute in different ways to subjects’ learning. Again, McCarthy (1999) warns against reducing technologies to motivation alone, and exhorts to ensure that contents and materials be motivating instead. The classical studies by Beauvois (1994, 1998) on motivation and computer-mediated communication show how subjects who are engaged in cooperative works feel less anxious and have the perception of a greater control on their production. Similar conclusions are reached by Warschauer, in his study, already quoted above, on Computer-mediated communication (1996), which lists three factors for which technologies are motivating: communication, empowerment and the greater learning possibilities.

The second perspective is that according to which the computer is a tool for content delivery. In this case also, a historic evolution of the sector may be noticed: from a tool for the delivery of drill activities (behaviourist/structural stage) to a tool for the design and distribution of original contents. However, it should not be forgotten that such contents are mostly represented by texts available on computer, which are, therefore, not representative of all possible text typologies. The available literature says but little, instead, about the computer’s logistic function and its usage for the distribution of materials and contents. A third, important study ambit regarding the computer’s role is its capacity to support project-making, i.e. complex works that are carried out with the help of different technologies.

A more interesting role within the ambit of technologies is that of the teacher during the last historical phase which brings us to the present day: the integrative stage. Within the system of computer-assisted language learning, the teacher’s role has usually been that of an intermediary between technologies and learners (as well as, of course, that of designing activities and contents). In the integrative stage,
instead, teachers, as well as having institutional and linguistic tasks (such as content
design), still assume a supportive role for learners which is more discreet, but also
more engaging than it used to be. In fact, if on the one hand the lesser control on
the interaction with technologies and the greater autonomy of learners make the
teacher’s intervention less strong, on the other they imply a range of problems and
collateral questions which influence the activities, and should be tackled for an ever
greater integration of technologies within language learning.

The learner’s role is perhaps that which is more immediately recognisable in the
historical development of this field, illustrated in the previous paragraph. Indeed, if
in the first experiments, oriented towards a structuralist and behaviourist approach,
the learners’ role was passive, in an integrative perspective it becomes active, to
the extent that we speak of the computer as of a tool box which is used as any
other tool within linguistic activities. Such a concept has its origins both in the
development of technology and, even more so, in the affirmation of constructivist
and socio-constructivist theories in language teacher education; furthermore, it
presents various points in common with the concept of normalisation, which will be
examined further on.

This change of paradigm is a well-known point, which has been highlighted by
research, and it clearly illustrates the state of the art of a sector in which technology;
communication and language learning are more and more integrated.

1.7 CONCLUSIONS: A WIDE PERSPECTIVE

The complex and dynamic nature of CALL as a branch of research and practice
(Hubbard, 2009) can be quite obvious for specialists of this field; it may be, however,
difficult for those who approach it for the first time. This chapter, as well as providing
a duty-bound and traditional overview on this sector, has introduced some themes
which are most relevant to CALL Teacher Education: that is to say, in the first place,
the relationship between technologies and linguistics; then the development of this
sector in a communicative direction and, finally, the main parties involved in this
system.

This chapter has dealt with the matter in width, as may be inferred by the two
definitions of this sector, i.e. “broad” and “narrow”, with the aim of illustrating its
guidelines and main themes, both as to historical development and in its present
state. Historical analysis should precisely point out that which is one of the main
themes in this field, and which has been a ground for conflict and crisis: that is, the
relationship between technology and linguistics. Such a relationship is, in a way, a
founding one, and thence requires an in depth analysis; that is to say, a description
aimed at understanding the inner mechanisms of this sector; a concrete and effective
analysis of CALL can only be based on such an analysis.
NOTES

1 The title of the book is, in fact, *CALL Dimensions, Options and issues in Computer Assisted Language Learning*.

2 These three types of activity are summed up in Carol Chapelle’s well-known work (2001) by the acronym CASLA, that is to say, *Computer Applications in Second Language Acquisition* which is also the volume’s title.

3 *Language activity* is used in a rather generic way to describe procedures in the definition provided by Richards and Rodgers (1982, 2001). *Task* is used to describe more complex activities like those carried out within the Task-based learning method. Although tasks constitute a procedure *strictu sensu*, the distinction is maintained as, in a technology enhanced environment, tasks generally imply peculiar tools (especially communication tools), while activities may involve language exercises software: in short, the two imply different technologies.

4 Such a perspective is in some ways analogous to the definition “wide”, but is linked up with it in the works of the authors who refer to it.

5 Nor should we forget that CALL Teacher Education often tends to have rather a technical/procedural approach; that is to say, it often focuses too much on programmes (see further on).

6 It is not, however, infrequent for some denominations and acronyms to be used as if they were interchangeable; see for instance Chapelle (2003).

7 TELL is acknowledged by various authors (including this writer) as a better definition.

8 But also Network-based Language Teaching, from the title of the renowned volume edited by Warschuer and Kern (2000). However, this term is nowadays less frequent and many refer to Computer Mediated Communication.

9 Indeed, CALL actually studies technologies in general, and it includes other tools than the computer: to quote but two, the interactive board and mobile devices.

10 On the TESOL standards, see §5.4.

11 The Uniqueness of language with respect to other human abilities is a subject of debate within SLA research, and hence cannot be taken for granted. On this topic, see Ellis (2008).

12 For an analysis of the concept of mediation see §3.3 and, in general, the works on the historic-cultural approach, e.g. Lantolf (2000).

13 “(…) in its early decades CALL was little more than a specialist interest within the wider field of language education in general (…). [CALL] has often been considered rather too technical and not pedagogically informed enough by classroom teachers, or alternatively, not technically sophisticated enough by those from a computing background” (Thomas, Reinders, & Warschauer, 2013: 3).

14 On the components of CALL, see further §1.4.

15 For instance, in English-speaking countries we speak of *English as a Second Language* (ESL), in French-speaking ones the term is *Français Langue Etrangère* (FLE) and in Italian-speaking ones *Italiano Lingua Seconda* (Italiano L2).

16 Beatty (2010: 8) defines this domain as “amorphous and not structured”.

17 We shall not, here, enter a(n almost) philosophical discussion as to the meaning of “technology” and, therefore, of “technology-assisted” activities. As far as concerns this book, all digital technologies are included in this definition: i.e. computers, mobile devices, interactive boards, etc.

18 This reminds one of Auguste Comte’s famous statement that to understand a science it is necessary to know its history.

19 Another historical account can be found in Warschauer and Kern (2000). This version is more schematic and gives more emphasis to the linguistic aspect: the three phases of CALL, in fact, are preceded by a description of three phases in language pedagogy. Furthermore, the three phases of CALL are named differently: structuralist, cognitive and sociocognitive.

20 The “traditional” exercises (quiz, gap-filling and match) are simple to create, for they are generally based on match algorithms, which check that the input corresponds to a pre-defined value, i.e. the right answer. More evolved programmes (e.g. Artificial Intelligence software) require, of course, more complex algorithms.

21 About normalisation, see §3.4.
On the role of the Internet in present-day CALL, see Thomas Reinders and Warschauer (2013). It is within the field of automated instruction that the acronym CAI, Computer Aided Instruction, was born.

1996 can be seen as a watershed year in the diffusion of technology as it witnessed a full boom in the sale of computers: in the last decade of the twentieth century, the number of active computers in the world rose five-fold, from just over 100 millions in 1990 to 550 million in 2000, a growing trend which was interrupted only in the second decade of the twenty-first century, with the diffusion of mobile devices Botti (2006).

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See Levy (1997) and Chapelle (2001), this theme, however, is absent in Levy and Stockwell (2006), Beatty (2010) and Blake (2013).

Interdisciplinary “includes a dimension of inter-relation, of deep exchange, whereas multidisciplinary refers to mere juxtaposition of different study branches” (Balboni, 2011: 43). On the concept of interdisciplinary vs. multidisciplinary, as on the relationship between language pedagogy and other study branches, see Balboni (2011): Italian research has dealt very cautiously with this subject (see Freddi, 1991, who warns against the danger that language pedagogy might become like a Harlequin’s dress if it indiscriminately uses notions taken from other study branches). A similar perspective may be found in Garrett (2009), where the concept of “interdisciplinary” is applied to computer-assisted language learning.

We will sometime observe that what might be obsolete in general CALL research might on the contrary turn out to be useful for CALL Education. The constructs of CALL research, in fact, are designed for those who already work with the technology, know the field and share a set of beliefs and practices. CALL Education, on the contrary, is generally (although not entirely) directed to newcomers who need to get to know the field and have different requirements from researchers.

Human Computer Interaction focuses, for instance, on topics such as input devices: today many signal a correction by rewriting a word they have misspelled followed by an asterisk, an habit which may be influenced by the fact that today instant messaging occurs through mobile devices which have small keyboards.

See Chapter 3 on this issue.

As a term, CMC appears, but is quite rare, in the volume “Network-based Language Teaching: Concepts and Practice”, where it obviously is a fundamental topic: however Pellettieri, in her chapter on online interaction and negotiation, does not use the term CMC. Chapelle, in her chapter in the same volume, does not use it either. At that time, CMC was already a popular concept/term, but mainly language education research; the volume edited by Herring (1996), for instance, is focused on pragmatics, whilst other works dealt, for example, with general education. CMC as a term began to acquire prominence in CALL research after 2000, in that year Blake published an important paper, in which the term was associated with SLA research. In the abstract he stated that “findings [of the presented research] suggest that computer mediated communication (CMC) can provide many of the alleged benefits ascribed to the Interaction Hypothesis” (Blake, 2000: 120).

Which is not to deny the pre-eminence of language pedagogy. In fact, the goal should not be confused with praxis: it is one thing to say that technologies are of use to language pedagogy; another to say that technologies are applied passively to ‘language pedagogy. The work by Hardistry and Windeatt (1989) seems to have been written precisely following the principle of application, for it presents activities in which technologies mainly have an accessory and complementary role: one activity, for instance, envisages the use of a datasheet on which a train timetable is written in order to programme a trip, but the real linguistic activity is the discussion among students, which could have taken place even without technologies. The article by Garrett (2009) reverses this perspective in the domain of computer-assisted language learning and, by putting on the same plane technology and Language Teacher Education, opens research to the possible influence of technology on learning. This is, in fact, the concept of integration, which will be dealt with here more than once.

The relationship between technology and linguistics will be dealt with in Chapter 2.
McCarthy (1999) warns against the motivating dimension of technologies and thinking that an activity should be exciting just because it is carried out on the computer. This point, in fact, has been put forward more than once in literature, with different nuances and, generally speaking, there is a whole corpus of researches aimed at dispelling the myths of technology (see Blake, 2009) among which there is, precisely, the ‘idea that technologies are in themselves motivating, regardless of the linguistic value of an activity. Although still fairly widespread (Kim, 2008), the notion of technologies as one of the driving elements for motivation has, with time, lost strength; for many, technologies have become the means through which to implement motivation strategies, for example by administering self-evaluation and self-check questionnaires (Chang, 2010) or, at the limit, as a phenomenon inter-related with the success of Language Teacher Education (Ushida, 2005). The success and diffusion of social technologies follows this trend. Mitchell (2012) individuates motivation in the use of social networks for communication, of which language learning is a product.

The subject of the competencies necessary for integration will be examined in depth in the chapter on CALL Foundations.