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Introduction

Over the past three decades computers have come to play an increasingly important role in language education. The traditional view among Computer Assisted Language Learning (CALL) educators of the use of Information and Communication Technology (ICT) in education as simply a means to an end is being challenged (Warschauer, 2005), and there is an increasing acknowledgement of the idea that ICT not only mediates human activity, but also transforms it, and as such, its use in education is gaining a merit of its own. This is particularly the case in language education, where Computer Mediated Communication (CMC) is becoming an integral part of language learning on all levels, and is thereby also changing teaching practice as well as the views of what language learning should be all about.

Set in this context this chapter gives an overview of some of the major developments that CALL has undergone since its emergence in the mid-1970s and discusses some of the implications for language teaching. The chapter is divided into the following parts. First, A Brief Review of CALL describes the overall development phases of CALL since the 1970s-1980s, which mirror both the state of the technology and the current views on language learning. Then, The socio-cultural view of (language) learning in the context of CALL – Theory and practice introduces theoretical frameworks and how they are integrated in learning designs. Next, Integration of CALL-methods in current language teaching attempts to critically evaluate national policies and educational strategies on ICT in language education in schools and universities in Sweden and elsewhere. We exemplify this through methods, tasks and tools being used in our own university environment in the Department of language studies at Umeå University. Finally, Conclusions and implications sums up the chapter and discusses its implications for the field of language teaching.

A brief review of computer assisted language learning

With its rapid development over the past 25 years, CALL has been characterized by many as a complex and dynamic field (Hubbard 2009, O’Dowd 2007, Ohlrogge and Lee 2008). As pointed out by Hubbard (2009), it is the constant changes in technology that make it necessary for CALL knowledge and skills to be continuously renewed, and with the amazing transformation in the ways in which technology has been incorporated in language learning and teaching, CALL has come to embrace a broader definition.
Early definitions of CALL simply involved ‘any process in which a learner uses a computer and, as a result, improves his or her language’ (Beatty 2003: 7). In more recent years attempts have been made to better capture the nature of the field. Hubbard (2009), for example questions this definition by raising two questions of what we mean by ‘computer’ and what we mean by ‘improve’. He argues that ‘computer’ should include not only the desktop and laptop devices but also the connecting network and other devices such as PDAs, mp3 players, mobile phones, electronic whiteboards and other digital equipment. To the second question of what ‘improve’ entails, Hubbard maintains that CALL now improves not only the learning, but also teacher productivity, teacher development, materials development and methods of language assessment. While the examples that Hubbard provides may not hold true anymore at the time of writing – a time of large scale, global Internet access, with constant developments of interactive, creative Web 2.0 tools and platforms, with interactive white boards, widespread social networks, mobile technologies, and online games (Dudeney and Hockly 2012) – his extensive view of CALL remains valid, considering the even more diverse and significant impacts these changes have provided in language teaching and learning.

Seeing CALL in this sense, it is closely linked with e-learning, a field that ‘designates the intersection of education, teaching, and learning with information and communication technologies’ (Friesen 2009: 4). For example, the word CALL has been used extensively in the Handbook of Research on E-Learning Methodologies for Language Acquisition (Marriott & Torres, 2009). It is thus important to emphasise that CALL does not simply involve the employment of technologies in language learning but it does support, and help transform, language education in different ways. Conole and Oliver (2007) stress this point when they differentiate e-learning from ICT in that e-learning represents the broader domain of development and research activities on technology application in education, while ICT merely refers to the technologies themselves. Indeed, CALL should be seen beyond being ‘technology-enhanced language learning’ (Dudeney & Hockly 2012). Empirical studies have shown that CALL does not only successfully support second/foreign language instruction (Grgurovic, Chapelle, & Shelley 2013), but technology impacts on the subject matter itself with computer-mediated-communication varieties of English emerging (Jarvis 2013). Jarvis (2013) proposes Mobile Assisted Language Use (MALU) as the new framework that goes beyond CALL. As MALU enables both conscious learning using tutorial packages and unconscious acquisition through accessing and transmitting information in English, it can be the starting point for the emergence of ‘an educational theory which cannot be separated from technology’ (Jarvis 2013: 199).

CALL theory and conceptualizations
In the triangle of theory, research, and practice of a domain of inquiry, it is theory that serves as the underpinning for the other two. In the field of CALL, researchers use theories to widen, refine, or build on, existing knowledge, while developers and teachers use theories to be informed of their practice (Levy & Stockwell 2006). However, CALL has traditionally been criticized for lacking a theoretical rationale for its design, development, and practice, and has been accused of being explicitly ‘technology driven’, thus missing a shared perspective of the education community (Underwood 2004). Some maintain that an increased technological sophistication does not correlate to increased pedagogical effectiveness (Hubbard 2009;
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This, and the acknowledged need for a theory for CALL (Garrett 1991) have brought about a number of conceptualizations and theoretical frameworks in an attempt to explain and document CALL. Two of the most cited views are those by Bax (2003) and Warschauer (2000). By classifying CALL into phases and approaches they have not only provided a critical chronological examination of CALL, but also covered other attempts to describe and understand CALL theoretical underpinnings.

Warschauer's and Bax's phases of CALL
Warschauer (1996); Warschauer and Healey (1998) and Warschauer (2000) interpret and analyse CALL development into three phases, which are referred to as Behaviouristic/Structural CALL, Communicative CALL, and Integrative CALL. It should be noted that ‘phases’ do not mean historical phases with precisely contained timelines, but rather they are shifting paradigms (Warschauer and Healey 1998). Warschauer and Healey suggest that we are now in the paradigm of Integrative CALL, which is based on a socio-cognitive view of language learning.

Bax (2003) provides a critical review of Warschauer’s conceptualization of the development CALL, and offers his own analysis consisting of three approaches: Restricted CALL, Open CALL, and Integrated CALL. He suggests that we are currently using the Open CALL, but we should aim for Integrated CALL, a phase where the field has reached a normalization stage and technology is ‘invisible’ as it becomes part of everyday life. Bax’s proposal of the three approaches of CALL is summarized in Table 1 on the next page (for the complete outline, see Bax 2003:21).

It seems that although adopting different terminology for different phases of CALL development, both authors have succeeded in describing the development of CALL in terms of its various theoretical underpinnings that connect with language learning and teaching approaches. These can be put under three overarching perspectives of behaviourist, cognitive and socio-cultural approaches. The theories provided are various, ranging from cognitive linguistics, psycholinguistics, to sociolinguistics. Since its emergence in the mid-1970s, CALL has thus moved its focus from ‘drill and kill’ behaviourist methods, through individual cognitive learning models, where the computer primarily was used as a tool to organise and structure knowledge, to current models of more interactive and collaborative learning from within classroom confines to the more widespread outside world.

Looking at the development of CALL over the past years one can thus see how it mirrors not only technological development but also developments in the view of how learning takes place. Early use of technology in language education tended to follow a behaviourist learning framework based on the ‘stimulus/response/feedback paradigm’ and the computer tools used tended to be simple game-like tasks where the learner was rewarded for correct answers (Davies et al, 2011). Later, technology served to enhance individual cognitive learning. The computer functioned as tutor and a tool (Levy, 1997), presenting vocabulary, structures and stimulation, while at the same time providing correction, and monitoring learner progress (Davies, 1992).
Table 1. Bax: phases of CALL

<table>
<thead>
<tr>
<th>Approach</th>
<th>Restricted CALL</th>
<th>Open CALL</th>
<th>Integrated CALL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Language system</td>
<td>System &amp; skills</td>
<td>Integrated language skills work</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mixed skills &amp; system</td>
</tr>
<tr>
<td>Type of task</td>
<td>Closed drills</td>
<td>Simulations</td>
<td>CMC</td>
</tr>
<tr>
<td></td>
<td>Quizzes</td>
<td>Games</td>
<td>WP (Web presence/Internet)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMC</td>
<td>e-mail &amp; others, according to needs</td>
</tr>
<tr>
<td>Type of student activity</td>
<td>Text reconstruction</td>
<td>Interacting with the computer</td>
<td>Frequent interaction with other students</td>
</tr>
<tr>
<td></td>
<td>Answering closed questions</td>
<td>Occasional interaction with other students</td>
<td>Some interaction with computer through the lesson</td>
</tr>
<tr>
<td></td>
<td>Minimal interaction with other students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of feedback</td>
<td>Correct/incorrect</td>
<td>Focus of linguistic skills development</td>
<td>Interpreting, evaluating, commenting, stimulating thought</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open, flexible</td>
<td></td>
</tr>
<tr>
<td>Position in curriculum</td>
<td>Not integrated – optional extra</td>
<td>Toy</td>
<td>Tool for learning</td>
</tr>
<tr>
<td></td>
<td>Technology precedes syllabus and learner needs</td>
<td>Not integrated – optional extra</td>
<td>Normalised integrated into syllabus, adapted to learner needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Technology precedes syllabus and learner needs</td>
<td>Needs and context analysis precedes technology decisions</td>
</tr>
</tbody>
</table>

The introduction of Web 2.0 and CMC has shifted the focus from ‘learners interaction with computers to interaction with other humans via the computer’ (Kern and Warschauer, 2000: 11). Authentic social contexts and learners’ language skill integration are emphasized through the use of the Internet and CMC (Warschauer and Healey 1998). These socio-cultural perspectives of language learning have had a significant impact on the nature of language education including the field of CALL. Now the content of the interaction and the discourse of the community are those values which are prioritised together with language learning:

The current paradigm of integrative CALL is based on a socio-cognitive view of language learning. From this viewpoint, learning a second or foreign language involves apprenticesing into new discourse communities. The purpose of interaction is seen as helping students enter these new communities and familiarize themselves with new genres and discourses. Thus the content of the interaction and the nature of the community are extremely important. It is no longer sufficient to engage in communication merely to practice language skills. (Warschauer, 2000:10).

The use of technology in language education is thus evolving from a separate innovation to a naturalized, normalized state of affairs, which is transforming not only language teaching, but also language itself. Bax (2003) likens this process to other technical inventions such as
The socio-cultural view of (language) learning in the context of CALL – Theory and practice

Core Concepts
The socio-cultural view of (language) learning as first described by Vygotsky (1981) is currently the dominant learning paradigm in CALL research and learning designs. Warschauer (2005:42) summarises three core aspects of Vygotsky’s theories that lie at the heart of such designs: Mediation, social learning and genetic analysis.

Mediation refers to the idea that tools or signs mediate all human activity. The tools or signs, however, are not merely seen as an intermediary bridge between the intended action and the actual outcome, facilitating action that could essentially have occurred without them. Instead they are an integral part of a complex symbiosis where the intermediaries actually alter the mental processes, modify human actions and thus open up for new possibilities. In CALL, this is of particular importance. Not only is the focus of the learning activity, i.e. language, arguably the most important tool we have at our disposal in any learning process, but in addition, technological tools also have an impact on how we use this language. In the words of Warschauer (2005:42): ‘we do not now have a traditional form of writing plus the computer, but rather we have entirely new forms of writing that need to be taught in their own right’. One very obvious example of this is the range of new genres that are emerging in the wake of digitalisation, including: chat language, the ‘Twitter feed’, the blog genre and other similar developments.

Social learning, according to Vygotsky (1978), is a dialectical process where learning takes place when problem-solving experiences are shared with someone else. It is only after this initial social process, where language is seen as the primary tool, that the learner internalises the knowledge. A key concept here is the idea of the zone of proximal development (ZPD): ‘the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers’ (Vygotsky, 1978:86). In this view of learning, learners’ interactions with surrounding cultures and social agents, such as more competent peers, contribute significantly to their intellectual development and take the learner further than what could be achieved in isolation. In accordance with this theoretical framework, a large proportion of current CALL learning designs are based on collaborative models, where CMC is used to bring language learners together in order to develop their target language skills, often using a tandem design whereby one group are L1 users who can act as capable peers for the L2 group. Such designs are often based on tasks drawing on...
common interests of the involved learner groups, thereby creating authentic communicative situations in the target language (for examples, see below).

**Genetic or developmental analysis**, a third major component of the Vygotskian perspective, refers to the need to analyse mental functioning to its origins – the immediate, historical, social and genetic contexts in which it unfolds. Levels here include the immediate context of the event (*microgenesis*), the developmental processes of the individual (*ontogenesis*), the cultural and historical context as well as the phylogenetic context, i.e. in the context of the developmental history of the species Homo sapiens, such as our predisposition to use tools and our ability to achieve complex thinking using symbolic signs. We can only make sense of a learning process in this greater context. For example, in a CALL context, this suggests that we can only understand the types of motivation and attitudes, for example, that students have toward working with ICT if we understand its impact on the particular communicative event (*microgenesis*), the individual’s attitudes and previous experiences of the technological tools being used (*ontogenesis*), the role of ICT in today’s economy and society, as well as its influence on the very nature of human behaviour (Warschauer 2005:43).

**Methodological applications in relation to the core concepts**

In order to illustrate more clearly how the principles of socio-cultural learning are realised in various CALL designs, we will now give some concrete examples of a method, tasks and some tools that are being used in language education at Umeå University, Sweden. Here we will pay particular attention to how the method, task designs and technological tools are justified in relation to the three core aspects listed above.

**Telecollaboration**

Given the substantial potential that Web 2.0 tools offer in bringing learners together and in response to the complex demands, such as language skills, intercultural communicative competence and digital literacy, that today’s world puts on second language learners, institutions are increasingly adopting models of Telecollaboration in their language courses (Guth & Helm 2010). According to Belz’s definition (2003:68), Telecollaboration takes place when ‘[…] internationally-dispersed learners in parallel language classes use Internet communication tools […], in order to support social interaction, dialogue, debate, and intercultural exchange’. In institutional contexts, such exchanges are often set up as structured tasks with ‘the aim of developing both language and intercultural communicative competence’ (Guth & Helm. 2010:14), and with the added benefit of introducing students to the tools of modern CMC. Guth and Helm (2010:10) summarise these three objectives in Figure 1.

The focus on tools in Telecollaboration entails more than a mere interest in the technology at hand, but is rather a recognition of the fact that new Web 2.0 tools call for new literacies (see section on mediation above). According to Steele and Cheater (2008) these include a number of online literacy skills, such as networking skills, collaborative skills, creative skills and critical skills that go beyond what has traditionally been associated with literacy.
The model also has a strong element of social learning, invariably involving collaborative designs, which bring learners together in order to develop both their language skills and intercultural competence. Such designs often involve so-called tandem language learning, which is based on mutual authentic language exchanges between the learner groups, where ideally, each partner group are native speakers of the other group’s target language. Participants will take on roles both as learners and ‘more capable peers’ during the course of a task, and the learning experience typically also involves cultural elements.

According to Guth and Helm (2010:71) modern telecollaboration ‘situates itself within a globalized context where the concepts of language and culture differ from those associated with national identity’ and take place in an online context ‘where individuals may have multiple identities that go beyond ethnic and national definitions. In this sense, telecollaboration can be seen as a mirror of society at large, where globalization and online cultures are blurring traditional national boundaries and are creating new identities as well as new ways of communicating these (see section on Genetic or developmental analysis above).

**Examples of CALL at Umeå university**

A concrete example of what telecollaboration may look like is the course Modern Latin America, which is part of the undergraduate program in Spanish at Umeå University. The course concept originated from a frustration with the lack of updated course literature on the complex historical, political and cultural situation that exists in Latin America. Teachers felt that students received a very skewed view of the situation in Latin America, a view heavily tainted by popular media’s partiality in reporting almost solely on disasters and problems. With the aid of so-called Flex-funding (a strategic effort by Umeå University to promote flexible and innovative learning models), a tandem course concept was developed in collaboration with students from Universidad Surcolombiana, Colombia, studying an English course with focus on European culture and society. The aim was to give the students a chance to practice their Spanish/English with near-/native speakers, and also to increase their intercultural awareness. An added ambition was to allow students to familiarise themselves with a number of modern Web 2.0 tools and how they could be used in language learning.
The course was organised around four themes: Men and Women, Religion, education, and a theme of your own choice. Students on both sides of the Atlantic were paired up in order to conduct discussions on the themes using real-time voice in a web tool of their own choice (most students chose Skype for this purpose). The one-hour sessions were organised so that the pair first spoke in English, during which the Swedish students acted as expert peers in dialogue focused on Europe, after which the language of communication switched to Spanish and the Colombian students took on the roles of experts on matters related to Colombia and Latin America. In this example, both groups of participants thus alternate between the roles of ‘more capable peers’ and learners helping each other to breach the zone of proximal development (Vygotsky, 1978:86).

After each meeting, students were asked to summarise their conversations in a wiki tool (PBworks), which allowed for collaborative construction of text that could be read by all course participants. The summaries were written in the target languages (Spanish and English) and participants would help each other to ensure that the quality of the text was satisfactory. The wiki was also interactive, allowing other course participants to comment in a separate comment field.

Another example of a slightly different application of the Telecollaborative model is the flex-funded project Gender-Bending in Virtual Space run by the subject group in English Studies at Umeå University. In this project we connected students of sociolinguistics from various parts of the world to discuss and experience gender and language issues from different cultural standpoints. The tool used was a so-called 3D virtual world (Second Life), where the participants could interact with the environment and each other through avatars, digital projections of the ‘self’, which can be shaped by the user thus allowing for new creative ways of projecting ‘identity’. The software also supports various modes of communication including real-time public and private voice and chat, as well as note cards which can be sent to groups of users (for further descriptions of the environment and how it supports Telecollaboration see Wang, Deutschmann and Steinvall, 2013). In this project, apart from getting the students to practice their English in an international context, we also wanted to raise students’ awareness of the mechanisms of gender construction through experiments where the students could assume identities of the opposite sex using voice-morphing (manipulating the voice digitally to a lower or higher pitch) and avatar construction (see Deutschmann, Steinvall and Lagerström, 2011 for further descriptions).

The two courses, which have both been very well received by students, illustrate many of the theoretical principles discussed above. Firstly, with regard to mediation, the affordances (defined as the quality of an object, or an environment, which allows an individual to perform an action) of the tools used do not only allow students to develop their language skills, but also open up new dimensions for communication, thereby placing new demands on the students. Speaking in Skype, as in example one, means paying particular attention to turn-taking rules, and the added availability of chat often means that students have to use speech and writing simultaneously. Further, the language used in the chat is often full of abbreviations, which the uninitiated user may not be familiar with. The wiki tool used in the first example, places new demands on students’ ability to collaborate when co-constructing
texts and Second Life, used in example two opens, up new dimensions for communication as public, synchronous verbal voice and text modes are combined with private alternatives and asynchronous modes of communication. In addition, as used in our project design in example two, the tools allow the voice quality to be manipulated so that a male student can sound like a female and the communication is further affected by non-verbal signals such as the morphology of the avatar (for further discussions of modes of communication in Second Life see Wigham and Chanier, 2013).

Secondly, the social element is evident in both of the designs. It is in fact the students themselves that contribute to the content of the courses and learn from each other. The teacher’s role is more about providing the framework, the scaffolding, for the learning to take place. Finally, with regard to Genetic or developmental analysis, the task activities are firmly situated in today’s communicative culture thereby preparing the students to ‘communicate, collaborate, create and negotiate, effectively in multilingual, multicultural global networks’ (Guth and Helm, 2010:72).

Integration of CALL-methods in current language teaching practice
While the applications of ICT in socio-cultural learning designs and methods described in the first two parts reflect the current practice among the research community and a limited number of innovative educators, they are far from the norms of the everyday language teaching in schools and universities today. We have, as Bax (2003) points out, still not reached a normalisation stage where technology is integrated into the syllabuses and is adapted to learner needs.

CALL in schools
Looking at the Swedish school situation, there seems to be a general lack of central strategies for integrating ICT in teaching methods, and while there are many sporadic references to the use of ‘digital tools’ in the policy documents and curricula for the different levels, the recent report on IT-use and IT-competence in schools from the Swedish National Agency for Education (Skolverket, 2013a) points to several shortcomings in the pedagogic integration of ICT in teaching as a whole and language teaching in particular. For example, there seems to be a great need for professional training among teachers and three out of ten teachers express a ‘great need’ for further training in basic computer skills. About 50 per cent feel they need more competence in how to use the computer as a pedagogic tool (Skolverket, 2013a).

Data from this report also show that the use of computers in many subjects is sporadic and often restricted to writing and searching for information on the Internet or producing presentations. The use of computers in the actual teaching situations seems to be relatively limited. With specific reference to language teaching, some examples that illustrate this include: 15 per cent of pre-school school teachers report that they use computers to stimulate an interest in writing; in elementary schools, 39 per cent of the teachers report using computers regularly in their teaching of Swedish as a subject area and for English this figure is 20 per cent. According to Peter Karlberg, Education councillor responsible for IT in schools, ‘much
remains to be done before the use of digital tools really will help to improve education in many school subjects’. (Skolverket, 2013b).

Moreover, the survey reports on great gaps in strategies for dealing with the more complex skills and issues associated with digital literacy. Such skills include the ability to effectively and critically navigate, evaluate and create information (Erstad, 2010); the ability ‘to manipulate and transform digital media, to distribute pervasively, and to easily adapt them to new forms’ (Jenkins, 2009); social skills such as digital communication, collaborative skills, and cross-cultural skills (Warschauer and Matuchniak, 2010; Erstad, 2010).

Similar situations are reported from other parts of the world. Cox (2013), for example, lists a number of ‘shortcomings’ in the British system, where some of the more alarming ones include teacher and student engagement with e-learning being limited to a small range of IT technologies. Cox also talks about a growing digital and cognitive divide across communities, and even within schools, impacting upon IT use and experiences. He concludes that although ‘policymakers recognize the importance of e-learning, there are widespread misconceptions about its potential to enhance student learning’ (2013:17). There is still arguably a focus on the tools themselves rather than on pedagogical frameworks for integrating the affordances that the tools offer in order to achieve specific learning goals.

CALL in university education
Since the early 1990s, the development of CALL in the university sector has primarily been driven by the needs dictated by distance education, in turn a result of universities striving to reach new markets of students in an ever more competitive market. Distance education, primarily in the form of e-learning, today contributes to a substantial chunk of many universities’ revenues. In Sweden, for example, the number of students studying online between the years 2002 and 2008 doubled and in 2011 this group made up roughly 20 per cent of the student population. The trends are similar in other parts of the world and in the U.S, for example, approximately 30 per cent study online (Högskoleverket 2011:11-12).

Spurred on in the early 1990s by what Langum (2013) describes as an almost idealistic belief in online learning’s potential to liberate the mind through the development of knowledge transfer, e-learning (and thus even CALL) developed rapidly, both technically and pedagogically (Langum 2013: xv). In the early 21st century many universities in Sweden started offering language courses over the Internet for economic reasons. In her report on digital language teaching Gagnestam (2010b) lists only five of the 25 investigated universities as not having specific strategies and/or projects for developing digital tools and methods in language teaching.

While many of these universities have developed innovative and holistic models based on the current principles of CALL such as social learning as well as student-centred and communicative approaches (Deutschmann, 2013; Beers Fägersten, 2013; Zhao, 2013), there is great discrepancy between the strategic efforts of different institutions and departments. On the whole, developments seem to be spurred on by a few individual enthusiasts, while the majority of university teachers feel that they do not have enough time to fully explore
the potential of digital tools in language teaching. Further, the use of digital technologies in language education is still largely limited to distance e-learning and not integrated in regular campus courses (Gagnestam 2010a: 52).

As for the use of Web 2.0 tools and modern social media in language education, the use is still very limited, with a handful of universities reporting on progress in this field (Högskoleverket 2011: 66). Recent developments in the university sector, such as the emergence of MOOCs (Massive Open Online Courses), reduced state funding for courses in the humanities resulting in Internet courses being seen as cash cows, and aborted efforts to encourage collaboration between universities (by the dismantling of NSHU in 2008, for example) risk reducing what once was a strong movement in language education towards collaborative models based on socio-cultural principles to what Langum (2013:vv) calls the “McDonaldization” of higher education, where students are increasingly left to their own devices without structured peer or teacher support and where the Internet simply serves as a storage place for ‘set menus’ of video streams and documents which students can choose from.

Discussion

Over the past decade, many researchers have pointed to the potential value of informal language learning that takes place outside institutional settings through digital social media such as multi-player on-line games, Youtube, Facebook, discussion forums and blogs (Gee 2003, 2004; Sefton-Green, 2005; Stutzman, 2005; Carr and Oliver, 2009; Selwyn, 2007a, 2007b, 2011). Social software of these types are well adapted for communication and community building, leading to the establishment of online social network communities where ‘democratic forms of self-expression and interaction between users’ is taking place on a global scale (Selwyn 2007a:3). The Web 2.0 revolution thus presents new exciting possibilities for language learning, particularly English, which is being used as a lingua franca for almost all online communication in an unprecedented manner outside the classroom. Indeed, several studies indicate that extra-mural use of Internet is a key factor in improving language skills (Lindgren and Munoz, 2013; Sundqvist, 2009). This also seems to hold true for more formal learning, and Grgurovic et al’s (2013) meta-analysis of 37 studies from 1970-2006 indicates that language instruction supported by technology was more efficient than traditional teaching methods with CALL groups outperforming the non-CALL groups. As shown in our case examples from Umeå, it is possible to integrate tools such as Skype, virtual worlds and wiki-tools into formal courses. Further, as shown by our examples, informed use of such tools can successfully answer to specific formal learning goals as well as socio-cultural learning methods. Another specific example of this is Canto, Jauregi, and van den Bergh’s study (2013), which compares language performance between treatment groups who collaborated with native speakers using Second Life and Adobe Connect and control groups who did not have opportunities to work with native speakers in traditional classrooms. The results show that the increase in the treatment groups’ oral proficiency was significantly higher than that in the control groups’ (Canto et al., 2013: 112). Important to note in this context that it is not possible to say whether it is the ICT-tools themselves or the possibilities that they afford that lead to the enhanced learning.
Using modern CALL frameworks such as Web 2.0 resources and telecollaborative methods in the formal classroom thus addresses several major challenges related to institutional second language learning situations such as the provision of opportunities to practice the source language in authentic settings, creating interest and motivation for using the foreign language and the creation of tasks with subject relevance to the students. CALL models also answer to many of the criteria of the student-centred social learning models that increasingly form the theoretical base for many national and international learning policies.

In spite of the obvious benefits of Web 2.0 environments in promoting language learning, educational institutions have been slow to embrace their potential. Introducing new technologies into the language classroom is not unproblematic and Bigum and Rowan (2008:249) argue that technology introduction in a school setting is more often than not a question of finding useful things to do with the technology rather than employing it to solve real problems. According to the authors, this is a result of trying to fit the technology to the classroom curriculum rather than paying attention to how the technology is used outside the classroom. The result is often that communication technology use in the classroom is inauthentic and fails to engage. According to Selwyn (2011:1) ‘much of the controversy surrounding the (non)use of digital technology in schools stems from a tension between the informalised nature of many digital practices and the rather more formal aims and activities of educators and educational institutions’; although free communication with native speaking peers may develop language skills, it may be difficult to match the acquired language skills against set goals listed in a syllabus.

Conclusions and implications
In this chapter we have discussed the major developments in the CALL field since its emergence in the mid-1970s. We have shown how it increasingly is based on socio-cultural models, where Web 2.0 tools and CMC are opening up the world to language learners giving them access to communities and contexts that go far beyond the reach of the classroom. In so doing, these technologies are transforming language learning and even language itself with new forms such as ‘chat slang’ emerging.

Fully integrating collaborative methods where language learners from around the world are brought together in authentic communication using computers in formal language teaching in schools and universities, however, is proving challenging. Given the obvious educational potential of Web 2.0 and social media, and the increasingly important part they are playing in our daily lives, there is thus a need for realistic efforts to ‘reconcile the formalities of the industrial-era school with the challenges of digital technology’ (Selwyn 2011:1). There seems to be a clear case for Prensky’s (2001) argument that the digital immigrants should take on the perspective of the natives and make use of their knowledge in order to improve the educational system. Arguably, this is one of the great challenges facing language teachers, university lecturers and policy makers in the years to come. Moreover, further research is needed to develop and evaluate methods for integrating the use of CMC in formal language education. We need to be able to more specifically measure the potential benefits of such methods and also evaluate what the potential pitfalls are.
References


