Classroom technology for young learners

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Introduction

Nowadays it is probably as rare to find an English classroom without a single computer or smartphone as it is to find distance learners of English who are isolated from any authentic exchange with others. Although early work in computer-assisted language learning (CALL) compared teaching and learning with and without technology – often contrasting traditional, face-to-face teaching with learning via computer – this boundary is now blurred due to developments both in teaching and learning practices and in technologies themselves. Face-to-face teaching with perhaps only traditional blackboards and textbooks, for instance, may be supplemented with homework requiring technology use outside class time, in what is popularly termed the ‘flipped classroom’. Here technology is not used directly in the classroom, but class teaching depends on it all the same. Should our definition include this use of technology? Conversely, a virtual class for a distance course taught exclusively online may employ the same tools with the same affordances as in the physical classroom, and may permit teacher-learner interaction which is very similar. Shouldn’t our definition therefore also include this kind of virtual classroom?

For this reason, it is difficult to define the term ‘classroom technology’, and to determine which technologies and uses fit this appellation. In their recent review of ‘technology use in the classroom’, Mama and Hennessy (2013) list Powerpoint, educational software, web-based video and display of images on the interactive whiteboard (IWB) as examples of somewhat conservative use of classroom technology. In his handbook on technology for foreign language teachers, however, Blake (2013) uses the umbrella term ‘digital classroom’ to include a much wider range of tools and resources, including use of web pages, CALL programmes and applications, computer-mediated communication (CMC), distance learning, social networks and games, thus encompassing technology use both in and outside the traditional physical classroom. We shall follow this broad definition in the present chapter to focus on teachers’ and learners’ use of technology in traditional classrooms, including both equipment and devices employed in physical classroom settings, as well as CMC reaching beyond the classroom walls.
The use of classroom technology with young learners of English, like many areas of applied linguistics, and indeed education studies, stands at the intersection of several academic disciplines. Figure 21.1 provides a schematic representation of the overlapping interests of three main domains. Second language (L2) studies focus on second language acquisition (SLA) and informs both English language teaching (ELT) and CALL. Information and communication technology (ICT) also intersects with education studies as the field of educational technology.

In many ways the findings of research in each area have not been communicated and applied effectively in others, leaving the field of technology-mediated language education with young learners somewhat bereft of both theoretical underpinning and empirical findings. We begin with a brief historical overview of work in classroom technology for young English language learners (YELLs), and then focus on critical issues related to the affordances of digital tools, the distinction between language interaction and technology, the pedagogical advantages of technology-mediated task-based language teaching (TBLT), and the challenges of orchestrating complex CMC interactions with YELLs. The chapter continues with a review of current CALL research with young learners, before considering recommendations for practice and future directions.

**Historical perspectives**

CALL research can be summarised in a succession of overlapping phases, beginning with *structural CALL* in the 1970s and 1980s (Gruba 2004; Warschauer 2004; Chun 2016). In this approach to technology-mediated language teaching and learning, computers were used to drill and practice the target language from grammar-translation or audiolingual perspectives, with a view to improving L2 accuracy. By the end of the twentieth century, cognitive views of acquisition and learning led to new uses of personal computers to develop fluency through communicative exercises in what has been termed *communicative CALL*. 
The sociocultural turn of the early 2000s coincided with the arrival of multimedia and widespread use of the internet, leading to greater attention to authentic resources for both content and language learning, and to social interaction, in the form of integrative CALL. Finally, Chun (2016) has proposed the term ecological CALL to cover a very recent phase of global and ubiquitous learning via mobile devices, involving the broader educational goals of intercultural competence and digital literacies.

This account of historical developments in the field gives the somewhat misleading impression of linear progress, suggesting that new technologies and new pedagogical approaches advance hand in hand. While it is true that early CALL programmes were largely based on structural linguistic analysis and behaviourist pedagogical assumptions, the same criticism applies to many recent applications designed for modern smartphones and tablets. Language apps for beginners, for example, often rely on decontextualised practice of single lexical items, or discrete-item multiple-choice grammar exercises, rather than on communicative or sociocultural approaches to language learning. Just as many individual teachers experience a form of pedagogical backsliding when integrating new technologies into their regular teaching repertoire, in the form of Fullan’s (2001) ‘implementation dip’, it appears that publishers and developers, too, often show signs of pedagogical regression when adapting teaching and learning resources for new platforms and devices. For Gimeno Sanz (2016, p. 1104),

the maturity we had acquired in the 1990s both in making the most of what technology had to offer at the time and how to apply that technology to the full benefit of pedagogically sound multimedia materials has not yet been paralleled even with the recent incorporation of social network applications or sophisticated virtual world software.

Researchers in other educational sectors have also adopted a critical stance with respect to technology integration. Early research on interactive software (Plowman 1996; Aldrich et al. 1998) decried the predominance of drill-and-practice activities, offering learners only what they termed reactive interactivity or indeed gratuitous interactivity, lacking any clear pedagogical purpose. Technological progress and a better understanding of technology integration have led to the development of different frameworks to describe the different types of interactivity afforded by different technologies, a crucial dimension which is examined in the next section.

Finally, the historical focus of CALL on adult learners should not be forgotten. Many findings have not filtered through to early language educators, where technology is viewed as a means of increasing L2 exposure, given what many consider insufficient time allotted to language instruction and the opportunities to access English-language media outside the classroom (Copland and Garton 2014). YELL researchers are aware of the emergence of ‘a wealth of small-scale classroom studies’ such as those reported in Pim (2013), but feel that ‘substantially more research is now needed throughout the primary sector’ (Enever 2016, p. 359).

Critical issues and topics

Some recent studies have examined the use of a broad range of tools and applications under the heading classroom technology, from language learning software and interactive whiteboards and mobile technologies to both asynchronous and live CMC, and of course web-based materials. In Table 21.1, we list examples of technology use together with some of the main affordances and challenges of each.

Among the difficulties teachers and researchers have identified with the use of these technologies in the YELL classroom is the question of interactivity: in work with IWBs,
Table 21.1 Tools and activities for technology-mediated ELT with young learners

<table>
<thead>
<tr>
<th>Tools /Activities</th>
<th>Uses</th>
<th>Affordances</th>
<th>Challenges</th>
<th>Examples from the literature</th>
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<tbody>
<tr>
<td>Language learning software</td>
<td>Digital storytelling</td>
<td>Interactivity</td>
<td>Predominance of drill-and-practice and grammar activities</td>
<td>Elsner (2014)</td>
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<td></td>
<td>Digital games</td>
<td>Multimedia dimension</td>
<td>Multimedia dimension is often underexploited</td>
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<td></td>
<td>Interactive exercises</td>
<td>Rich input</td>
<td>Predominance of drill-and-practice activities</td>
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<td></td>
<td>Extensive listening</td>
<td>Individual, autonomous practice</td>
<td>Insufficient ready-made material</td>
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<td></td>
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<td>Superficial or gratuitous interactivity</td>
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<td>Cognitive overload</td>
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<td>Kegenhof (2014)</td>
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<tr>
<td>IWBs</td>
<td>Multisensory presentations</td>
<td>Enhanced interaction</td>
<td>Teacher centredness and learner passivity</td>
<td>Yáñez and Coyle (2011)</td>
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<tr>
<td></td>
<td>Interactive tools (e,g., drag and drop, hide and reveal) to encourage learner participation</td>
<td>Authentic, rich input</td>
<td>Predominance of drill-and-practice activities</td>
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<td></td>
<td>Anonymous quizzes using learner response systems</td>
<td>Facilitating understanding of grammar concepts and rules (e.g., reordering categorizing)</td>
<td>Insufficient ready-made material</td>
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<tr>
<td>Tablets/mobile phones</td>
<td>Creating own digital products (e.g., videos, digital stories)</td>
<td>Ubiquitous and user-friendly technology</td>
<td>Cognitive overload</td>
<td>Alhinty (2015)</td>
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<td></td>
<td>Sharing and revisiting work by listening to audio and video recordings</td>
<td>Seamless access to recording and playback functions allowing focus on meaning and form</td>
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<td>Pellerin (2014)</td>
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<tr>
<td>Asynchronous CMC</td>
<td>Collaborative writing on wikis</td>
<td>Authentic audience for learners’ L2 production</td>
<td>Younger learners have limited competence with written language</td>
<td>Dooly and Sadler (2016)</td>
</tr>
<tr>
<td></td>
<td>Sharing content via blogs and podcasts</td>
<td>Opportunities for meaningful interaction and collaboration</td>
<td>Exchanging pre-recorded audio or video messages beyond ‘here and now’ context can be frustrating</td>
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<td></td>
<td>Use of online platforms (e.g., Moodle) to support telecollaboration between remote classes</td>
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<thead>
<tr>
<th>Tools /Activities</th>
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<th>Examples from the literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live CMC</td>
<td>Interviews with native speakers</td>
<td>Access to peer or expert interlocutors who do not share learners’ L1</td>
<td>Learners may lack communication strategies for dealing with interactional breakdowns</td>
<td>Whyte (2011), Cutrim Schmid and Whyte (2015)</td>
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<td></td>
<td>Online debates or discussions between remote classes</td>
<td>Authentic tasks based on genuine communicative intent and real gaps in knowledge or opinion</td>
<td>Teachers may limit spontaneous interaction by controlling exchanges too tightly</td>
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<td></td>
<td>Collaborative projects</td>
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<td>Web-based materials</td>
<td>Internet material for presentation of new content (e.g., YouTube videos, film sequences, digital images)</td>
<td>Access to authentic, rich and motivating input</td>
<td>Cognitive overload and disorientation</td>
<td>Sailer et al. (2014)</td>
</tr>
<tr>
<td></td>
<td>Internet search, reference tools (dictionaries, encyclopedias)</td>
<td>Facilitating comprehension of language input (e.g., images, video.)</td>
<td>Lack of skills for finding and evaluating online material</td>
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<tr>
<td></td>
<td>Online games and learning activities</td>
<td>Supporting autonomous learning</td>
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Tablets and phones, or web-based activities, for example, studies found examples of superficial interactivity without adequate pedagogical underpinning which failed to allow space for creative language use, or which led to cognitive overload and disorientation (Pellerin 2014; Kegenhof 2014; Sailer et al. 2014; Yañez and Coyle 2011). Language learning software has also attracted criticism, this time concerning the design of learning tasks which frequently involve drill-and-practice exercises rather than more cognitively demanding communicative activities (Elsner 2014). Other limitations on children’s opportunities to interact in English in ostensibly more challenging CMC environments were found to be imposed by teachers in both design and implementation of tasks (Whyte 2011). A third challenge emerging from this body of research is therefore the exploitation of opportunities for rich CMC exchanges in ways which provide sufficient support for YELLs (Cutrim Schmid and Whyte 2015; Dooley and Sadler 2016).

This section focuses on these three critical issues in technology integration, namely, (a) classroom interaction and digital interactivity, (b) the design and implementation of teaching and learning tasks and (c) the challenges of orchestrating complex technology-mediated interaction with young beginners.

Classroom interaction and digital interactivity

A key affordance of the technologies listed in Table 21.1 is the opportunity to enhance interactivity in a constructivist environment where learning constitutes an active process of knowledge creation. However, there have also been debates in the literature about the nature and quality of technology-supported interaction. For instance, several studies on the use of IWBs (e.g., Whyte, Cutrim Schmid and Beauchamp 2014) and videoconferencing (Whyte 2011) in the EFL primary classroom reveal no clear-cut positive effects on classroom interaction associated with these technologies, which were mostly used to maintain teacher control of learning processes and manage pupil behaviour.

Based on findings of classroom-based research, some authors propose multidimensional models to analyse technology-enhanced classroom interaction, including technical, physical and conceptual interactivity (Jewitt et al. 2007) or didactic, interactive and enhanced interactivity (Glover et al. 2007). These frameworks provide ways of analysing classroom practice not only in terms of the technical competence of teachers and/or learners, but also with respect to the pedagogical goals pursued. One influential approach to teaching with technologies involves a four-stage developmental model, moving from the authoritative class, where the teacher controls technological interactivity, through the dialectic class, where space is allowed for learners to respond, and the more flexible dialogic class, to a synergistic stage where all participants have the power to shape learning events (Beauchamp and Kennewell 2010). Increased interactivity is thought to meet diverse learning needs (Wall et al. 2005), enhance motivation (Gitsaki and Robby 2014) and contribute to the development of digital literacies (Warschauer 2012).

In the language classroom, too, the nature and quality of technology-supported interaction have attracted interest (Favaro 2011; Cutrim Schmid and Whyte 2015; Dooley and Sadler 2016). CALL frameworks suggest that technology supports interaction by

- Making key linguistic features salient.
- Offering modified input and supporting modified interaction.
- Allowing learners to participate actively in tasks.
- Facilitating the noticing of errors and incorporation of feedback (Chapelle 2001).
These principles inform instructional design conforming to L2 research recommendations for learners of all ages and are particularly well served by task-based pedagogical approaches discussed next.

**Design and implementation of teaching and learning tasks**

Many researchers have linked the enhanced interactivity made possible with technology to TBLT, an approach which ‘seeks to facilitate language learning by engaging learners in the interactionally authentic language use that results from performing a series of tasks’ (Ellis 2013, p. 1). The main tenets of this approach are summarised from Ziegler (2016):

1. The **primary focus is on meaning**: learners are focused on the content, including semantic and pragmatic meaning, rather than the form.
2. The task must provide **communicative purpose**, stimulated by learners’ need to impart information, solve a problem or express an opinion. The learners’ use of language is necessary to achieve the desired outcome and is not necessarily the goal in and of itself.
3. The task should be **learner-centred**, requiring learners to draw mainly on their own linguistic and nonlinguistic resources.
4. Tasks are **authentic** and representative of the real world, drawing on real-world processes of language use and integrating form and function.
5. Opportunities for **reflective learning** are also provided. This offers learners the chance to consider the process as well as the outcome, encouraging cyclical and reflective learning.

Over the past twenty years an important body of CALL research has followed the TBLT approach (Chapelle 1998a; 1998b; Doughty and Long 2003; Gonzalez-Lloret and Ortega 2014). For Ziegler (2016), ‘technology-mediated TBLT provides an ideal framework in which technology and tasks provide great potential for a mutually beneficial relationship’. With its focus on non-linguistic outcomes, TBLT also allows teachers to develop more general digital literacies. In the recommendations for practice section, we will discuss research related to three criteria for technology-mediated TBLT most relevant to YELLs: learner-centredness, authentic language use, and reflective learning.

**Orchestrating complex technology-mediated interactions with young beginners**

A paradox of technology-mediated language learning with young beginners is that real-time L2 interaction requires the competence to orchestrate very limited resources in sophisticated ways, yet this competence can only be acquired through active participation in such complex interactions. Discussing CMC with YELLs, Milton and Garbi (2000, p. 287) note the particular challenges of controlling L2 interaction to limit cognitive load and build confidence:

An application for use by young beginners must somehow contrive a situation where young learners can use what language they have in a realistic, meaningful and communicative way. Equally, the application must contrive that learners are not frequently exposed to language they cannot understand.

Dooly and Sadler (2016, p. 55) identify similar challenges for telecollaboration, including the need for sophisticated oral language, with limitations on interests and topics, technological
skills and use of written input. A further problem concerns teaching and learning materials. As Milton and Garbi (2000, p. 287) point out, ‘the content of beginners’ textbooks can be highly idiosyncratic’. This causes problems especially when young learners have to interact with interlocutors from a different educational context, who do not always share the same knowledge of linguistic structures and vocabulary. The challenge for technology-mediated language teaching is thus to accommodate the restricted linguistic resources and capabilities of YELLs, while still providing opportunities for authentic target language use.

Some responses to the challenges presented by CMC interaction, technology-mediated TBLT and technical versus pedagogical interactivity are reviewed in the next section.

**Current research**

As noted earlier, the three disciplines informing technology-mediated YELL teaching share blind spots: both SLA and CALL research tend to neglect young learners, while early language educators often adopt an uncritical stance with respect to technology. Concerning CALL research, the increasing use of technology for second language learning and teaching has led to a large volume of work, as evidenced by a number of recent meta-studies and overviews (Grgurovic et al. 2013; Golonka et al. 2014; Lin 2015; Plonsky and Ziegler 2016). There is some disagreement about findings. While Golonka et al. (2014, 92) claim that ‘for most technologies, actual increases in learning or proficiency have yet to be demonstrated’, the bulk of CALL research to date is tentatively positive with respect to SLA effects, suggesting that technology-mediated learning is at least as effective as traditional face-to-face teaching. However, young learners are largely absent from this picture. Lin (2015), for example, noted that only 5 of the 59 studies she examined focused on younger learners (aged 9–15); none involved very young learners. Similarly, in their systematic review of 47 CALL studies conducted in ESL ‘concerned with the acquisition of linguistic knowledge or skills’ in compulsory education, Macaro et al. (2012) identified only nineteen concerning young learners (primary school level). The study found much to criticise in terms of scientific rigour and concluded that the link between technology use and language learning has not been clearly established, arguing that ‘future research needs to provide a tighter link between technological applications, Second Language Acquisition (SLA) theory, and learning outcomes’ (Macaro et al. 2012, p. 30).

One recent small-scale study involving twenty-eight 10–11-year-old EFL learners in Barcelona appears to answer this call. Tragant et al. (2016) compared an intervention class based on individual reading-while-listening with audiobooks, with a control class receiving teacher-generated input. They found ‘that the students in the intervention group progressed at least as much as the students in the comparison group, despite their having had much less teacher-led instruction time’. The authors consider these findings encouraging ‘in particular for difficult learning contexts where teachers are in short supply and input may be accessed multi-modally’ (Tragant et al. 2016, 252).

As noted, however, technology specialists and language educators do not necessarily communicate or collaborate effectively, and YELL teacher educators are not well represented or well served by mainstream CALL research. Indeed, Pazio (2015) notes ‘a move away from the term CALL in the primary MFL context’ in favour of the term ‘ICT for MFL’. This focus on tools rather than learning is echoed in a study of digital technology use in USA schools, where the authors found that ‘although many teachers both advocate and use digital tools in instruction’, they generally ‘use technology more for preparation and administration than for instruction’ (Underwood et al. 2013, 480). In our own work we have found a similar
preference for non-pedagogical use of technology among both novice and more experienced language teachers in primary and secondary foreign language classrooms across Europe. Other caveats against undiscriminating technophilia apply. In their review of global YELL practices, Garton, Copland and Burns (2011) remind readers that ‘in many schools computers remain a luxury and internet access is limited’, while Golonka and colleagues warn that ‘using technology in delivering a lesson or instructional unit will not make bad pedagogy good. Nor does a lack of technological tools or applications prevent effective teaching’ (2013, p. 93). The mere presence of technology does not ensure automatic learning gains, as we will show in this section.

Over the past ten to fifteen years, both national and European funding has been specifically targeted at foreign languages and digital education. Projects which have been the focus of published research are listed in Table 21.2.

All of the telecollaborative projects in Table 21.2 involved young learners communicating with remote interlocutors, both teachers and learners, including native speakers and other L2 learners. Many involved live oral interaction via video communication or virtual worlds, and some also included a teacher education dimension. All reported a strong motivational effect for all participants in the projects, but few documented learning effects. All gave special attention to both the design of teaching and learning tasks, and to support for learner L2 interaction.

Some projects investigated technology-supported YELL interaction (Favaro 2011; Cutrim Schmid and Whyte 2015; Dooly and Sadler 2016). Studies of IWB use and videoconferencing (VC) in the primary EFL classroom, for instance, found that concerns about maintaining teacher control of learning processes and managing pupil behaviour often outweighed goals related to L2 interaction and learning (Gruson 2011; Whyte 2011; Cutrim Schmid and Whyte 2015). IWB research conducted in primary schools in the UK, France, Germany and Spain suggest that interactivity is often limited to physical interactivity, where a single learner manipulates elements on the IWB in front the class (Yañez and Coyle 2011; Whyte, Cutrim Schmid and Beauchamp 2014). Research from the iTILT project (Whyte, Cutrim Schmid, van Hazebrouck Thompson & Oberhofer 2014), which analysed 81 lessons by 44 language teachers at four educational levels in six European countries, also revealed a general preference for activities involving lower levels of interactivity. The majority of IWB-based drill-and-practice activities conducted by project teachers were observed in primary EFL classes, where there was very little focus on using the technology to support communicative-oriented activities. Instead, the IWB was mainly used to support step-wise knowledge building by drilling. Research on learners’ and teachers’ perceptions of IWB-mediated activities also reveals dissatisfaction with levels of interaction during lessons. Sailer et al. (2014) note the risk of using technology to increase lesson pace rather than improve interactivity and interaction, and suggest that a major challenge is the lack of CALL materials designed for YELLS. In general, teachers tend to design CALL materials with only superficial interactivity, where learners use the IWB to move pictures or textboxes across the screen, or to reveal answers embedded in the electronic files (Coyle et al. 2010; Gray 2010; Yañez and Coyle 2011).

A number of projects have involved VC with young learners and these typically report motivational effects (Gruson 2011; Macrory et al. 2012; Phillips 2010; Pritchard et al. 2010). Phillips (2010) used VC to allow young learners of French to communicate with native speakers and found increased motivation for L2 learning in participants. However, although the objective was authentic communication, learners’ L2 output was highly controlled, limited to recalling previously learned chunks or performing minor substitutions.
<table>
<thead>
<tr>
<th>Projects</th>
<th>Name</th>
<th>Languages</th>
<th>Learner age/level</th>
<th>Technology</th>
<th>Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>PADS (Spain, 2010)</td>
<td>Plurilingual, Audiovisual and Digital Competences</td>
<td>EN</td>
<td>7–8 years</td>
<td>virtual world</td>
<td>Dooly and Sadler (2016)</td>
</tr>
<tr>
<td>ITILT2 (2014)</td>
<td>Interactive Teaching in Languages with Technology</td>
<td>CY, DE, EN, FR, NL, TK</td>
<td>all sectors</td>
<td>smartphones, tablets, CMC</td>
<td>Whyte and Cutrim Schmid (2017); Cutrim Schmid and Cvetkovic (2016)</td>
</tr>
</tbody>
</table>
Other studies report similar findings. A number of small-scale projects have attempted to address these concerns: Cardoso (2011) used learner response systems to increase interactivity, while Kegenhof (2014) used Web 2.0 tools in IWB storytelling activities to enhance participation and engagement.

Perhaps one of the most promising avenues for improving both techno-pedagogical interactivity and L2 interaction, however, is live oral communication. Recent work in synchronous CMC with YELLs has sought to combine VC with other technologies to provide additional support for L2 interaction. Our own study of VC interaction between primary EFL learners in France and Germany using live audio/video and screen-sharing in a TBLT framework found higher levels of learner-learner interaction and spontaneous L2 production than in previous projects (Whyte and Cutrim Schmid 2014; Cutrim Schmid and Whyte 2015). Another project involved VC and machinima (short video clips featuring virtual world avatars) in a CLIL initiative in Spain (Dooly and Sadler 2016). Tackling health education with 7–8 year-old YELLs, this project achieved a high level of conceptual interactivity by providing opportunities for learners to explore complex concepts through authentic interaction with both real and virtual remote interlocutors.

These studies raise a number of issues in CMC with young L2 learners. As noted earlier, Dooly and Sadler (2016, p. 55) highlight ‘the need for somewhat sophisticated oral language use if the pedagogical design aims for telecollaboration with other speakers’. Because of young learners’ restricted linguistic resources, the majority of project tasks in the French-German exchange imposed a tight framework that often prevented spontaneous language interaction. Teachers and learners expressed a desire for greater learner-centredness to allow more creative and experimental language use, and develop appropriate communication strategies for dealing with interactional breakdowns on their own. Both studies stressed the importance of providing adequate support for the complex interactional demands of VC tasks.

Other efforts to improve interactivity and interaction with YELLs involve tablets and smartphones. Our previous distinctions between technical versus pedagogical or conceptual interactivity, and limited drill-and-practice versus communicative interaction also apply to these technologies. Closed apps, with a predetermined language bank, allow memorisation and practice in reading, writing, listening and sometimes also speaking (e.g., Duolingo, MyWordbook). L2 use is limited to repetition of the language provided by the app, with little room for spontaneous and creative language output. Open apps, on the other hand, offer much more freedom (e.g., Book Creator, Puppet Pals, iMovie). Here, a choice of templates seems more likely to inspire and invite language production in ways both familiar and stimulating for learners growing up surrounded by technology. Little research into use of these apps with YELLs has been conducted to date. Alhinty (2015) investigated the open apps Puppet Pals and Show Me in L2 interactions in and outside the classroom. Learners worked in groups to create multimodal e-books by combining these apps with the tablets’ built-in camera and voice recognition functions. She reported motivational effects, and particularly a preference for synchronous mobile interactions, which created an impression of ‘relatedness’.

The studies reviewed in this section indicate that technology has the potential to enhance the levels of interaction and interactivity in the YELL classroom. However, our discussion also highlights the importance of designing didactically meaningful language learning tasks to fully exploit the potential of technology-mediated environments for authentic L2 interaction.

With respect to our focus on technology-mediated ELT with young learners in this chapter, a number of conclusions can be drawn. First, there are persistent calls for more focused CALL research, in particular, research driven by theory rather than policy, and
which addresses learning rather than motivational effects. Second, technology-mediated L2 teaching with young learners involves unique difficulties related to a mismatch between learner competence and task demands: solutions proposed to date have involved videocommunication and virtual worlds. Finally, both SLA and CALL have neglected young learners; this population has specific characteristics and needs with clear consequences for teaching, learning and research. In our recommendations for practice in the next section we focus on three dimensions of technology-mediated TBLT of particular importance for YELLs.

Recommendations for practice

We have suggested elsewhere that ‘technology can help teachers to implement task-based approaches that are likely to foster interlanguage development by providing access to rich language input and supporting opportunities for output, interaction and reflection, which are necessary for effective language learning’ (Whyte 2014, p. 13). As proposed earlier, we now return to three key dimensions of technology-mediated TBLT to draw research-based lessons for the language classroom.

Learner-centredness

A main requirement in TBLT is for learners to rely on their own resources, rather than repeat memorised words, expressions or dialogues. In the French VC project discussed earlier, primary school learners met with native speakers in a videoconference to exchange information and play a game (Phillips 2010). The teacher used songs and rhymes to help learners memorise formulaic questions, and linked gestures to meanings to help them retrieve words and expressions during live CMC. Phillips concluded that ‘the use of associative codes appeared to aid pupils’ procedural learning by mediating both their initial apprehension of the language and also their rapid language retrieval, seemingly without threatening their sense of independence’ (p. 232). However, the project did not seem to encourage learners to use their own linguistic resources, since the interactions mostly involved ‘prescribed’ questions (Comment t’appelles-tu ?) inviting ‘slot-and-frame’ responses (Hier j’ai mangé ____).

In the telecollaborative project cited earlier (Whyte and Cutrim Schmid 2014; Cutrim Schmid and Whyte 2015) primary pupils aged seven to nine Germany and France used English as lingua franca to interact with the remote class in three collaborative tasks: making ID cards, a supermarket exchange and a breakfast invitation. Participants saw the tasks as authentic and relevant in design, but in early stages of the project, the actual implementation of these tasks did not sufficiently encourage learners to use their own resources. Transcriptions of the first CMC interactions showed high levels of teacher mediation in learner-learner exchanges. In later phases, the teachers made efforts to help learners develop communication strategies to negotiate meaning and repair communication breakdowns on their own. Similarly, both teachers and pupils felt the planned tasks imposed a tight framework which prevented spontaneous use of language, and so later phases of the project aimed to allow more open activities. Thus, in preparation for one of the supermarket sessions, 15 German learners showed and described the content of their lunch boxes without preparation, using any linguistic resources at their disposal. Since the learners had not prepared or practiced in advance for the activity, they could not rely on memorised chunks, but had to adapt language online during interaction. An important challenge with YELLs is thus the balance between adequate linguistic and emotional support, on one hand, and space to create on the other.


**Authentic real-world tasks**

Another important TBLT criterion is the real-world relevance of tasks and the opportunity to integrate form and function in authentic contexts. Dooly and Sadler (2016) achieved this in their CMC project where primary school children took on the role of scientists investigating the consequences of good and bad habits related to personal hygiene, physical exercise and diet. Learners interacted with virtual world avatars to learn new information, which they then communicated online with telecollaborative partners. The authors report that a majority of learners assimilated the core curricular objectives, and several were able to produce target language structures far beyond the output expected for their age and L2 proficiency. They attribute this success to the nesting of telecollaborative tasks in a range of pre- and post-tasks designed to introduce and recycle the target L2 items in different modes throughout the project. The authors claim: ‘through the carefully scaffolded, meticulously planned task sequencing, the learners gradually developed more sociopragmatic competences in their use of formulaic chunks in contextualized “everyday” talk’ (Dooly and Sadler 2016, 73).

**Reflective learning**

The third TBLT dimension addressed in this section is the provision of opportunities for reflecting on learning, with respect to both the process and outcome of tasks. Pellerin (2014), for instance, investigated the contribution of mobile technologies (iPods and tablets) to the interpretation of tasks by young language learners. She notes that these technologies can allow young learners to create their own learning environment and meaningful language tasks, as well as help them self-regulate their language learning process. She describes how learners in a French immersion class were allowed to select the iPad tools they would use to demonstrate their learning about a specific science topic in an assessment task, and encouraged to consider their own needs and preferences as well as the task requirements. This is the same approach used by Alhinty (2015), where learners were encouraged to create their own digital content, which could then be transformed into language learning tasks for other students.

This type of technology-mediated task can also facilitate L2 learning by allowing ‘focus on form’ (explicit focus on grammar during a communicative language activity). Individual or small-group tasks using mobile technologies may promote the noticing of forms, and, in particular, gaps between learners’ interlanguage and the target language. Pellerin (2014) provides an example where 6–7 year-old anglophone learners of French became aware they lacked the vocabulary necessary to describe an object while recording their description of a picture. As she points out, technologies such as tablets allow seamless access to recording and playback functions, meaning learners can record their spoken language in various activities and then revisit their work by listening to the audio and video recordings. This revision process allows students to become consciously aware of their strengths, as well as notice gaps in their oral competencies in the target language.

**Future directions**

A crucial factor determining the future of technology use in the EFL young learner classroom is institutional policy. Considering the fact that ICTs are usually promoted as symbols
of progress and economic prowess, it is reasonable to expect continuing investment in ICT in education. Therefore, one can speculate that new technologies will continue to find their way into the young learner classroom in the years to come. The question is whether these new developments will make a positive impact on language learning and teaching. The research reviewed in this chapter points to several factors that need to be addressed in order to achieve this aim.

First, as in CALL research more generally, there is a dearth of rigorous studies of language learning outcomes in relation to technology-mediated YELL instruction. More longitudinal work is needed to investigate sustained effects over time, and to compare use of technology in and/or outside class (Lin 2015), with and without direct teacher mediation (Tragant et al. 2016). Then, while TBLT offers an attractive framework for technology-mediated teaching and learning activities, attention to task design is essential to further our understanding of how emergent technologies such as videoconferencing and mobile technologies can support the language learning process of YELLs, as well as address digital literacies. This chapter has shown how TBLT principles can inform the conception and implementation of technology-mediated tasks in order to balance young learners’ needs for support in sophisticated real-time interactions with their propensity for playful, spontaneous use of language. Careful planning is required to sequence activities which allow learners to understand and gradually acquire new language in meaningful contexts while also leaving room for individual initiative and choice (Cutrim Schmid and Whyte 2015, Whyte and Cutrim Schmid 2014; Dooly and Sadler 2016).

A third concern involves materials design and, more broadly, teacher education. Communicative technology-based materials are not readily available commercially, placing additional demands on teachers as materials designers. Clear principles for materials design and examples of good practice are needed to help teachers develop an increased awareness of the different types and levels of interactivity and language interaction supported by technology, and empower them to exploit new technologies in ways that are consistent with SLA theory. Many challenges faced by CALL practitioners derive from a lack of adequate pedagogical training for the integration of new technologies in ways that enhance language learning and teaching. There should be a special focus on the education of pre- and in-service language teachers, who are pivotal players in the mediation of digital technologies in the language classroom and in wider processes of technology adoption in schools. In spite of widespread technological investment in many parts of the world, teachers can and do resist educational and pedagogical hegemonies in ways that affect learning (Cutrim Schmid and Whyte 2012; Gray 2010). For this reason, the quality of professional development available to teachers will be critical in shaping the uptake of new technologies in the young learner classroom in years to come.

A number of models of CALL teacher education have been proposed, from situated practice and experiential modelling to novice-expert tandems and the development of open educational resources and practices. Key principles underlying these models are (a) CALL pedagogy rather than technical aspects (Hubbard and Levy 2006), (b) authentic language teaching scenarios (Egbert 2006; Cutrim Schmid and Hegelheimer 2014), (c) peer collaboration that supports the development of communities of practice (Whyte 2011, 2015), and (d) reflective practice and engagement (Guichon 2009). The findings reported in this chapter can contribute to CALL teacher education of L2 teachers of young learners to assist them in developing the necessary competencies for transformative practice in the challenging context of the young learner CALL classroom.
Further reading


This book presents seven case studies which focus on the use of interactive whiteboards for the teaching of languages, covering special educational needs, teacher training, materials design, gamification and CLIL. Four chapters focus on the young learner classroom.


This case study investigates the integration of IWBs into the teaching of EFL in French schools, and includes four primary teachers. It provides an analytical framework for documenting the development of their IWB-mediated teaching practice, and highlights the challenges and opportunities inherent in the process of technological innovation involving IWB use.

Related topics

Materials, motivation, classroom management

References


