Technology and Task-Based Language Teaching

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Abstract

The inclusion of technology in language education is a standard practice today. However, not all technologies are equal, and it is essential that, if they are to be used for language learning, their design, implementation, and evaluation are guided by language development research. Among the existing methodologies for language teaching, task-based language teaching (TBLT) presents an ideal platform for informing and fully realizing the potential of technological innovations for language learning. This chapter reviews the trajectory of the merge of technologies and tasks from 2000 to today, highlighting those contributions that impacted the way we understand technology-mediated task-based language teaching today. The chapter presents current research that explores the intersection between task design issues (e.g., task complexity, language production) and innovative technologies (e.g., online multiplayer games, mobile digital augmented reality games, virtual environments). The implementation of new technologies and new language learning methodologies is never an easy and smooth process. And without a doubt, there are some difficulties and issues that still need to be resolved about technology-mediated TBLT: a clear definition and operationalization of a task, a plethora of possible technologies to include in a curriculum, and the fast emergence of innovations. Finally, the chapter offers possible future directions for the field.

Keywords

Technology-mediated Task-based Language Teaching (TBLT) • Task • Needs analysis • Curriculum design • Language learning • L2 culture • Computer-mediated communication (CMC) • Web materials • Experiential learning • Innovation • Gaming • Virtual worlds • Augmented reality • iCALL

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S.L. Thorne, S. May (eds.), *Language, Education and Technology*, Encyclopedia of Language and Education, DOI 10.1007/978-3-319-02237-6_16

Contents

Introduction

The inclusion of technology in education is the norm today, and second and foreign language courses are not an exception. However, not all technologies are equal, and motivation and novelty are not necessarily sufficient to make them effective tools for language learning. It is essential that their design, implementation, and evaluation be guided by curricular principles based on education and language development research. Among all the existing methodologies for language teaching, task-based language teaching (TBLT) presents an ideal platform for informing and fully realizing the potential of technological innovations for language learning.

TBLT is based on the idea of "learning by doing" or "experiential learning" (Dewey 1938/1997). That is, we learn a language by doing something with it rather than knowing about it. Rather than mastering a particular linguistic piece of the language, in TBLT, the goal is to achieve communicative competence that is accurate, complex, and fluent through tasks which require engagement with that target language. Although there are multiple understandings of TBLT as a methodology, they all agree that tasks are the building blocks of a TBLT curriculum.

Corresponding to different views of TBLT, tasks are also defined and operationalized quite differently, from tasks as more traditional classroom activities (Nunan 2004) to tasks as the real things we do every day in life (Long 1985). However, a few characteristics are common and essential to all tasks. See Ellis (2003) and Skehan (1998) for in-depth discussions of types of tasks. Tasks are meaning oriented, are communicative in nature, and focus on the content of the message. Tasks aim to replicate target language use as authentically as possible and should be goal oriented, incorporating real contextualized language with application outside of the activity itself. Therefore, the assessment of a task is not so much on the use of discreet language items but rather on the task outcome and the achievement of the task goal.

Early Developments

Early incorporations of technology into task-based language learning were mainly translations of exercises/tasks that fulfilled principles of TBLT in face-to-face contexts into a computer platform. Technologies, mainly computer-mediated text-based

communication (CMC) platforms, were used to engage students in jigsaw, dictogloss, information gap activities, decision-making tasks (closed-ended), and discussion tasks (open-ended). These tasks were used to investigate the effects that the technology had on the language produced by the learners, in comparison to face-to-face interaction using the same task (i.e., Lee 2002). Results focused on the amount and quality of interaction (modifications, feedback, uptake, etc.) and varied across studies. While some of these studies found task-based CMC interactions to be productive and conductive to language learning, others found negotiation in CMC not as abundant as in face-to-face interaction. See Ortega (2009) for an in-depth evaluation of negotiation in CMC research. The commonality of these studies is their focus on the type of interaction produced by learners when facilitated by media rather than focusing on the study of the task itself.

A subset of CMC studies were based on telecollaborative (teletandem) projects among learners sharing each other's L1s as L2s. These projects occupied several weeks of the course syllabus and had a strong cultural learning goal. The tasks used were mainly discussion tasks and were based in numerous shared cultural artifacts. See Helm (2015) for an up-to-date review.

During the early years, a few researchers looked at the effects of task design (type of task, number of participants, task difficulty) on learners' interaction when it was mediated by technology (e.g., Blake 2000; Keller-Lally 2006; Lee 2002; Smith 2003). The results of these studies are also quite inconclusive. While some found no effect for task type (e.g., Keller-Lally 2006), others found jigsaw tasks to produce language that incorporated more negotiation of meaning (e.g., Blake 2000), and others found that decision-making tasks included more negotiation than jigsaw (e.g., Smith 2003). This early debate is still a productive line of research. See, for example, Yilmaz (2011).

The idea that technology extends learning opportunities in ways that would be difficult if not impossible to achieve in traditional classrooms (Sykes et al. 2008) pushed the field to design task-based studies incorporating technologies other than CMC. Some of the early research developed and evaluated tasks enhanced through video (Levy 1999) and glosses (Plass et al. 1998), tasks embedded in web-based spaces (e.g., González-Lloret 2003), and tasks delivered through interactional multimedia software (Schrooten 2006). These studies aimed at assessing the potential that the technology had to enhance comprehension as well as to produce the types of rich interaction believed to promote language and cultural learning.

Major Contributions

During the early years of computer-assisted language learning (CALL), research started to make connections between the use of technologies and tasks for language learning, which served as the foundation for all subsequent research. Chapelle (2001) laid out a task framework for CALL in which she proposed that tasks in CALL should be authentic, practical, focused on meaning, and appropriate to the students' level and learning goals. CALL tasks, according to Chapelle, should also provide opportunities for focus on form (an integral characteristic of TBLT

instruction) and have an added benefit beyond the learning of language (i.e., developing skills to use technology outside of class, increase students' interest in the L2 culture, etc.).

2003 was a productive year for work on technology and tasks. Chapelle's (2003) book examined second language learning principles and connected them with the way technology may be most effective to promote language learning. She proposed two types of technology-mediated tasks: those that employ CMC in their design and those based on interaction between the learner and the computer. Both types of tasks have been developed since then (CMC tasks in particular), with a growing interest for the second group, which has moved the field into exploring tasks embedded in and delivered through games, virtual environments, and augmented reality through mobile technologies. These will be presented below.

Also in 2003, an article by Doughty and Long appeared in the open online journal *Language Learning & Technology* which featured a clear intersect between technology and TBLT. In line with Chapelle (2001), they proposed that technological choices should be based on second language acquisition (SLA) research findings and offered methodological principles of TBLT as guidance for task development, such as using tasks as the unit of analysis, including activities that promote "learning by doing," providing rich, elaborated input, corrective feedback and focus on form; respecting the learners' developmental processes, including individualized instruction; and promoting collaborative learning.

Finally, Skehan's (2003) article in the *Computer Assisted Language Learning Journal* pointed out the opportunities and dangers in the use of web-based materials for language learning. Among the main advantages of technology, he maintains the potential of the web as a source of language learning materials and input. However, all that input by itself (simple exposure to information and language) is not enough to develop language. Web materials, according to Skehan, need to be manipulated to promote interaction, focus on form, and noticing of features of language and then to consolidate those features through activities/tasks. Skehan points out that the task literature can help with making decisions about what types of web materials to incorporate based on existing knowledge about, for example, task complexity, whether we want to focus on accuracy and fluency (language structure) or complexity and accuracy (interactivity), what to include as pre-task, task, and post-task, etc. Researchers are still currently trying to operationalize these ideas, investigating, for example, what "task complexity" means when the task is mediated by technology or whether we can even apply the same concepts and models from tasks that are not technology-mediated. See section "Work in Progress" below.

Since 2003, multiple studies have looked at several technologies employing tasks (from more traditional jigsaw-type tasks to more real-world tasks). In the last few years, a renewed interest in technology-mediated TBLT has spiked, as demonstrated by recent review studies (Lai and Li 2011; Thomas 2013) as well as volumes on TBLT and technology addressing both practical and theoretical matters (Al-Bulushi 2010; González-Lloret and Ortega 2014; Thomas and Reinders 2010).

Thomas and Reinders' (2010) edited volume follows Chapelle's (2001, 2003) call to investigate the interface between task-based L2 research and CALL. The volume

is a collection of research which explores the potential and challenges of different technologies (mainly CMC) to incorporate tasks. Echoing previous research, the *Afterward* of the collection points out the importance of developing technology-mediated tasks that are informed by SLA research findings, as well as investigating language learning within the digital environments in which students are commonly immersed.

In a recent edited volume, González-Lloret and Ortega (2014) propose a new understanding of technology-and-task integration, one that is fully integrative and not just a translation of face-to-face tasks to online environments and one in which pedagogic tasks would maximize the benefit of transformative new technologies. In order to reach this full integration of TBLT and tasks, González-Lloret and Ortega propose that, first, a clear definition of task should exist. Tasks integrated with technology should primarily focus on meaning, rather than on grammatical forms. They should also be holistic and authentic, drawing on real-world processes of language use. Tasks should be learner centered, considering students' needs and wants for language, their technological applications, and their digital skills. Lastly, tasks should bring reflection to the learning process; they should provide opportunities for higher-order learning as part of principles of "experiential learning" (Dewey 1938/1997). In addition to a clear definition of task, for a full integration of technology and tasks, it is important to be aware of the implications that adding technology has on the task. In addition to the emergence of new aspects to familiar tasks, both new tasks and learning to use new technologies may need to be incorporated into the curriculum. Finally, in line with contemporary views of TBLT (Van den Branden et al. 2009), a programmatic understanding of TBLT is advocated that pays attention to all aspects of a language curriculum, from needs analysis to assessment and evaluation, and that considers the role of technology in all of them. Although we have still not seen many fully developed technology-mediated TBLT curricula, recent research has started to define the different components for such a curriculum, from illustration of a needs analysis incorporating technology and tasks (González-Lloret 2014) to issues of task selection based on complexity (Adams and Nik 2014), task implementation (Cantó et al. 2014), student assessment (Winke 2014), and course evaluation (Nielson 2014).

Work in Progress

The recent interest in technology-mediated TBLT is growing in parallel to a burst of innovations beyond CMC tools that connect speakers with new possibilities through faster hardware that allows multimedia, multiuser platforms. As with any new field, pioneers in language learning through these technologies are exploring, first and foremost, their general potential for language learning and integration into teaching and their possible articulation with teaching and learning methodologies.

Among the new studies, gaming for second and foreign language learning has gained special attention from the CALL community. There are strong connections between gaming principles and the concepts behind TBLT. For example, the

structure of most games is based on the completion of tasks, best known as "quests," which are sequenced according to principles of complexity (contextual, organizational, algorithmic, etc.) and aim at actively engaging participation in "doing something." In addition, game players shape the games by the actions they take and the decisions they make, much like speakers shape a task once they are immersed in it. Game players learn to play mainly by playing (as well as talking to other players, reading about the game, etc.) which fits with TBLT's main educational philosophy of experiential learning.

A few authors have explored the efficiency of tasks to promote language learning within games and other virtual environments, but this is very much a work in progress. Among the first studies is Sykes' (2012, 2014) research into a virtual environment called *Croquelandia*. The tasks in this environment were designed to expose students to Spanish pragmatic speech acts that were infrequent in the classroom (refusals and apologies), by interacting with avatars that presented different situations common in the daily life of a student. Another example of the incorporation of tasks and task-based principles into new technologies is Holden and Sykes's (2012) work on a mobile-based game *Mentira*. The game was designed for Spanish students to interact among themselves, with the mobile devices, and with a physical neighborhood in Albuquerque, New Mexico, through a mystery-type activity composed of several tasks. Similarly, Collentine (2013) has also explored a built 3D environment in which students need to engage in two different tasks to find clues about a crime (one missing-person case and one murder mystery) interacting with other learners via CMC as well as avatars (non-player characters) and a variety of objects. Collentine investigated the relationship between linguistic complexity in the input and L2 production. This is the first study that, using regression analysis, looks at different measures of input complexity from a 3D world in Spanish to find out which variables were actually affecting the complexity of learners' output. Collentine found that more information in the input resulted in more information production and more linguistic complexity in the learners' output. The learner's output contained more lexical variety when the input was dense (included nouns, verbs, adjectives, and adverbs) but lacked lexical variety, and their output was more dense when the input lacked lexical variety and was not syntactically complex. Finally, the learners' output was syntactically more complex when the input was semantically but not syntactically complex. Collentine's research demonstrates the importance of designing tasks that include certain linguistic features in the input (input rich in information rather than complex) for learners to generate complex language.

In a similar line of investigation, Adams and colleagues (e.g., Adams and Nik 2014) are looking at several dimensions of task complexity (following Robinson's cognition hypothesis) to be able to predict student output. In their research, they have found that in CMC tasks, when learners perform tasks more complex by a lack of prior knowledge, they produce more lexical complexity and less negotiation. However if they perform tasks for which they have prior knowledge, their quantity of language increases, but not their lexical complexity or their accuracy. This research also consistently points out the limitations and challenges of employing theoretical

frameworks of face-to-face TBLT in the study of technology-mediated TBLT. See Ortega and González-Lloret (2015) for a review of research on task complexity in technology-mediated TBLT.

Another technology that is receiving considerable attention recently are social virtual worlds and Second Life (a free 3D virtual world where than 450,000 users can interact in a variety of academic and social settings) in particular. Investigation into tasks performed inside Second Life have been studied looking mainly at the affordances of the medium to promote L2 cultural awareness and cultural acquisition through tasks. It should be noted that the work of the NIFLAR European Project is managed by the University of Utrecht, which has developed several environments in Second Life as well as pedagogical tasks to promote social interaction and cultural awareness. More information can be found at http://niflar.eu/.

One more emergent area of research is that of augmented reality as a place for tasks. Thorne et al. (2015) present research focusing on understanding how language learners interact with a mobile digital augmented reality game played in groups around one mobile phone (a pedagogically driven decision to promote collaborative work and negotiation in the L2). The study investigates how participants orient to the mobile device (a phone), to the physical world around them, and to each other for the completion of the task. The importance of the device and the holder of the device is demonstrated by how frequently participants orient to them for instruction and leadership, by how the device was the center of most interactions and how information from the device was made public and available through talk. We certainly need more research to build a corpus of knowledge about how tasks and mobile technologies interconnect, and this study is a first step toward this goal.

As new technologies emerge, new research will be needed to gauge the impact that incorporating tasks and technology-mediated TBLT principles within innovation may have on language learning. Research will have to adapt and evolve as we apply principles and theories of non-technology task-based research to technology-mediated task research. New advances of theory, research, and practice will be essential to have a clear set of concepts of what technology-mediated tasks are (Chapelle 2014). These will not only help design research, develop materials, and plan evaluation research, they will also help in moving the field of technology-mediated TBLT forward. This idea brings about as much excitement as concern, emphasizing one of the clearest challenges of technology-mediated TBLT: the speed of innovation.

Problems and Difficulties

Given the rapid changes in technology and innovation, predicting what tools students will need in the future to be able to accomplish a task in the L2 is pure speculation. We can certainly find out what technologies students need to use currently, but predicting those that they will need after graduating in 4, 5, or 10 years is almost impossible. For this reason, it is essential to focus research on the affordances of a tool, environment, or activity which promote language learning,

so that, when technology changes, we can revisit whether these essential components are still intact.

This rapid change of technology affects one of the central tenets to TBLT: the idea that there should be a close connection between the tasks performed in class and in the real world, that the tasks should be as authentic and real-world as possible (Van den Branden 2006). This notion gets even more complicated when we try to define what is "authentic" in relation to technology. In most language classes, we will have students who only use technology for academic purposes (word processor, search engines, email. . .), others who may use technology to engage in social networking with speakers of the target language, and there will probably be a couple of gamers who would want to have access to a game in the target language. All of these constitute real authentic uses for these learners and may pose difficulty when developing a task-based curriculum. Deciding what technologies to include in a classroom curriculum should not be different from the multiple needs and desires that students may have regarding topics and activities in the classroom. A well-developed needs analysis, with a balance of sources and methods, should help decide which tasks, what language, and which technologies to include in the curriculum.

Another important challenge to technology-mediated TBLT (and to TBLT in general) is the lack of a clear definition of task. As innovation brings more variety in what we can do with technology, the definition of a task within technology may get stretched and diluted. In order to maintain a recognizable methodology, we need to keep the core characteristics and principles of a task intact while adapting it to new media.

Even with a clear definition of task, some of the issues that face-to-face research on task faces do transfer to technology-mediated tasks, for example, the idea that a task gets transformed by the students when they engage in it in ways that cannot be predicted by the task designer. As Seedhouse (2005) argues, differences between "task-as-workplan" (the expectations for how the task is implemented and executed) and "task-in-process" (what actually happens when the learners engage with the task) exist. These differences may actually be amplified by the inclusion of technology, since it adds one more layer to the task design and therefore additional opportunities for the task design to be changed. It is important, then, that technology-mediated TBLT research pays attention to both "task-as-workplan" and "task-in-process." This necessitates the collection and analysis of data about the actual carrying out of the task, rather than just making claims about the task before it is executed and evaluated. It also necessitates inclusion in the analysis of possible interactions that occur "around" the task that may be relevant for the completion of the task as well as for language learning.

Finally, for the field of technology in TBLT, and CALL in general, it is essential to understand technology as integral to the education system but without "technological determinism" (Warschauer 2004). We need to develop a critical capacity for the "analysis of the affordances of technology, needs of language learners, and opportunities missed when technology is selected" (Chapelle 2014, p. 329). Therefore, the inclusion of technology (and what technologies exactly to include) should be driven by the analysis of learners' needs and conditions for task completion, and it should be as carefully planned as any other aspect of the task design.

Future Directions

The directions for future research into technology-mediated TBLT will be heavily influenced by the changes and new affordances of innovations in technology, which, as stated above, are almost impossible to predict. However, future research will also have a lot to do with the direction that CALL research and SLA in general are exhibiting now.

Parallel to the evolution of CALL and SLA toward epistemological diversity and inclusion of new theories (e.g., emergentism, dynamic systems, complexity theories under the usage-based philosophy), technology-mediated TBLT will incorporate new research agendas not yet addressed. In particular, it will include research topics incorporating social dimensions of second language learning such as issues of identity construction through tasks; the role that the technology has in mediating knowledge; how we conceptualize privacy and social spaces; how knowledge is distributed, co-constructed, and shared through different media in time and space; what role pragmatics of a language play in the design of tasks; etc (González-Lloret and Ortega in press).

In addition, as technologies reach populations that have not traditionally been part of SLA studies, there will be more variety in studies. Technology use is now pervasive among very young children, and we will need studies into pre-school and school-age children learning language mediated through innovation in and out of institutional settings. See Butler (2015) for an excellent example of research with Japanese children on understanding gaming for language learning from the children's perspective. In addition, as people's capacities to engage in technology evolve, we will need studies of people learning languages with high and low computer literacies, as well as multilinguals engaging with different technologies within a TBLT framework.

Although Chapelle (2001) has already mentioned the need for more multilevel analysis of technology-based tasks (analysis of the software, analysis of the task, task success, and empirical evaluation of the learner's performance), this is an area that is still neglected in the field. Most studies are still constrained to the study of just one of the aspects above. This may be a consequence of the difficulties of large time and resources consuming research, as well as the still existing limitations of space for publication in main journals in the field. A few examples of how multilevel analysis can be conducted with tasks and technology are starting to emerge (e.g., Sykes 2014), but, without a doubt, more is needed.

With more research in all areas of technology-mediated TBLT, and a more programmatic view of TBLT that will incorporate a range of aspects from needs analysis to student assessment and evaluation, we will most likely see more research on curriculum implementation and formal evaluation. Nielson (2014) is one of the few studies today that has evaluated a technology-mediated full curriculum (for a Chinese language course).

As language education becomes more specialized, the design and research of technology-mediated language tasks for specific purposes will advance. Although we only have a few examples for journalism (Appel and Gilabert 2002; Reeder 2010)

and vocational technical professions (Schrooten 2006), the idea of incorporating tasks designed specifically for a group of learners with common needs and goals fits perfectly within the TBLT framework. As more technical training in second/foreign languages is tailored to be delivered virtually through the Internet, we will need more research on its development and implementation, as well as its efficacy and generalizability to other similar contexts.

One last field of CALL that has just started to intersect with task-based language teaching is iCALL (intelligent CALL) which employs AI (artificial intelligence) practices. Up to now, most of the existing research has focused on written interaction between the learner and the computer system. The first examples of iCALL for language learning in the mid-1990s could be considered the first gaming and simulation environments for second and foreign language learning, designed to present the learners with interactive input, allowing them to set the action of the activity, as well as providing them with corrective feedback. For examples and discussion, see Schulze (2010). Although most research up to date focuses on L2 reading and writing skills, as voice recognition software improves, we will probably see more iCALL research focused on all four skills (reading, writing, speaking, and listening). We could say that CALL research on gaming (see above) is in some way iCALL research, but focusing on the user side of the application rather than on the system that facilitates the human-computer interaction.

Finally, of great importance for the successful implementation of technology-mediated TBLT is teacher education. Without proper methodological education, teachers revert back to the techniques and classroom resources that are familiar to them. Not to mention how intimidating technology can be for teachers without proper training. For an example of teacher education in the creation and implementation of technology-mediated tasks, the reader can see Winke's presentation in the colloquium "Technology-mediated TBLT" at the 2013 TBLT Conference at http://technology-mediatedtblt.blogspot.com/2013/10/tblt-2013-colloquium-technology.html. With a few examples of investigation in this area as a starting base (e.g., Raith and Hegelheimer 2010), this important research will certainly increase in the near future.

Cross-References

- ▶ Digital Literacies in Teacher Preparation
- ▶ Educationally Designed Game Environments and Feedback
- ▶ History and Key Developments in Intelligent Computer-Assisted Language Learning (ICALL)
- ▶ Online Intercultural Exchange and Language Education
- ▶ Technology and Second Language Teacher Professional Development
- ▶ Virtual Worlds and Language Education

Related Articles in the Encyclopedia of Language and Education

Margaret E. Malone: Developing Instructor Proficiency in (Oral) Language Assessment. In volume: Second and Foreign Language Education

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