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ARTICLE

Technology-mediated task-based language teaching: A qualitative research synthesis

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Abstract

In the past 10 to 15 years, researchers have begun to explore the possibility of synthesizing research on task-based language teaching (TBLT) and computer-assisted language learning (CALL) in the interests of advancing the development of both fields as well as informing practice. In particular, there has been an increasing number of naturalistic, classroom-based studies, which have demonstrated the affordances of TBLT in particular contexts, but whose findings may be less generalizable. Against this backdrop, a qualitative research synthesis of these classroom-based studies is warranted. The current study adopts grounded theory (GT) as the methodology to systematically synthesize qualitative findings from 16 technology-mediated TBLT studies published between 2002 and 2017 in second and foreign language contexts. This resulted in the identification of (a) the characteristics of technology-mediated TBLT, (b) the affordances and limitations of technology-mediated TBLT, and (c) the factors affecting the effectiveness of technology-mediated TBLT. Following this synthesis, a possible research agenda is proposed and practical implications are suggested.

Keywords: *technology-mediated task-based language teaching, task-based language teaching, SL/FL, qualitative research synthesis*

Language(s) Learned in This Study: *Chinese, English, German*

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Introduction

Since its introduction more than thirty years ago, task-based language teaching (TBLT) has received wide-spread attention from researchers in the fields of second language acquisition (SLA) and language education (Robinson, 2011). Being conceptualized as 'an offset of communicative language teaching' (Kumaravadivelu, 2006, p. 66), TBLT represents a paradigm shift of mainstream views about language teaching from a focus on 'knowledge of language' to a pragmatic and experiential focus on 'achiev[ing] communicative purposes' (Scarino & Liddicoat, 2009, p. 45). TBLT perceives tasks as the organizational unit or, in Bygate's (2016, p. 386) words, 'a reference point', for instruction and curriculum design. Proponents of TBLT claim that learners of a target language (TL) acquire the written and spoken forms of the TL by engaging in a series of meaning-focused and contextualized communicative tasks (Bygate, 2016; Doughty & Long, 2003; Ziegler, 2016). On the other hand, TBLT has been controversial because it stands in opposition to the majority of the traditional language teaching methods in the twentieth century, such as grammar-translation and audio-lingualism. Ellis (2009) contends that the crux of the disparity between TBLT and these traditional, synthetic approaches lies in the fundamental rationale of TBLT that 'language learning will progress more successfully if teaching aims simply to create contexts in which the learners' natural language learning capacity can be nurtured' (p. 222). In particular, studies in the past decades indicate a significant popularity of TBLT in the Asia-Pacific region (e.g., Hong Kong, mainland China, Japan, South Korea, Thailand), where English is learned as a second (ESL) or foreign language (EFL) (Butler, 2011; Carless, 2009; 2012).

Reminiscent of TBLT, computer-assisted language learning (CALL) has grown exponentially as a field, with an increasing number of studies, mostly focusing on second/foreign language (S/FL),

documenting the use of a variety of technological tools (e.g. word processors, presentation software, computer-mediated communication applications, Web 2.0 applications, blogs, wikis, social-networking, interactive whiteboards, and more recently digital games and augmented/virtual reality) employed by language teachers (Baralt & Gómez, 2017; Duman et. al., 2015; Levy, 1997; Sauro, 2011; Ziegler, 2016). Despite the plethora of technology being incorporated into the language classroom and their developmental and sociocultural benefits, researchers have identified the need for a more structured and theoretical approach to CALL to 'maximize the potential of technology for language learning' (Lai & Li, 2011, p. 508) and 'design more pedagogically effective computer-based activities' (Ziegler, 2016, p. 137). In response to such a call for a structured and theoretically-grounded CALL approach and in view of the growth of both TBLT and CALL studies, researchers began to explore the possibility of synthesizing the two branches of research in the interest of advancing the development of both fields (González-Lloret & Ortega, 2014). Ziegler's (2016) description best captures the intersection between TBLT and technology:

> Tasks and technology are ideal partners in a reciprocal relationship, providing opportunities for researchers seeking to explore how the integration of technology can enhance or facilitate the benefits of task-based language teaching (TBLT) as well as addressing how TBLT can serve as a framework in which to ground research conducted in CALL contexts. (p. 137)

Against this backdrop, it is the intention of the present study to synthesize qualitative data from 16 primary studies which employed a qualitative or mixed-methods (with the latter, the focus is on qualitative findings) research design to examine technology-mediated TBLT in S/FL classrooms between 2002 and 2017[1]. The findings of these studies are analyzed inductively by adopting the grounded theory (GT) method (Glaser & Strauss, 1967). GT has been employed as a methodology to conduct qualitative research synthesis in educational fields (Au, 2007; T. Chen, 2016). Instead of verifying hypotheses, researchers who employ GT adopt a constant comparative method to 'develop new theory based on the systematically collected evidence' (T. Chen, 2016, p. 367). To this end, the purpose of the present study is to summarize, integrate, and theorize qualitative findings on the topic of technology-mediated TBLT in S/FL contexts with reference to the following research questions:

1. What are the characteristics of technology-mediated tasks in the primary studies?
2. What are the affordances and limitations of technology-mediated tasks reported in these studies?
3. What are other emergent themes resulting from the GT analysis?

The next section of this paper provides an overview of research and practices of technology-mediated TBLT. After this, the steps taken in conducting the meta-synthesis on the 16 studies will be described; coding results (including emergent categories and properties) will be reported and discussed in the later sections. Finally, implications for future technology-mediated TBLT research and practical implications will be raised in light of the synthesized findings.

Technology-Mediated TBLT: Research and Practice

Technology-mediated TBLT has undergone a number of developments in recent years. We have seen a shift towards greater use of technology in the implementation of TBLT, especially with the advent of social networking, mobile technologies, and the widespread availability of digital games. Second, we have seen an increase in carefully-constructed research, both quantitative and qualitative, that is more directly informed by SLA theories. Technology has been particularly investigated for its potential to alleviate some of the widely-reported (perceived) problems with TBLT, including the limited opportunities for authentic communication in the classroom and in FL settings in particular, the limitations (perceived or real) of communicating only with other language learners (Carless, 2012), and the challenge of encouraging students to participate, especially those who may lack willingness to communicate (WTC), or a 'readiness to enter into the discourse at a particular time with a specific person or persons, using a L2' (MacIntyre et al., 1998, p. 547). Another common problem relates to students' (and teachers') expectations of traditional

classroom roles and the influence of highly structured curricula that prepare learners for tests that may focus less on productive skills.

The incorporation of technology into pedagogical tasks appeals to many researchers and practitioners of TBLT as a potential solution to the aforesaid problems (Thomas, 2013; Thomas & Reinders et al., 2010). First, research has documented that with the use of synchronous and asynchronous computer-mediated communication (CMC), learners produce an increased amount of the TL as a result of lowered anxiety and increased motivation. For example, Levy & Stockwell (2006) have shown how technology-mediated tasks can extend language learning opportunities beyond the classroom and create opportunities for *genuineness* in interaction. Beyond providing opportunities for TL use, there is evidence that the use of technology may lead to higher engagement and L2 interaction. For example, Yamada (2009) reports that both the number of turns produced by learners and the number of target expressions increased when they chatted online, Tavakoli et al. (2019) have shown how the integration of real-world texts into classroom tasks led to higher motivation in L2 reading, and Oskoz and Elola (2014) have demonstrated the effect of using web 2.0 tools on L2 writing. Higher levels of engagement were also found by Reinders, Lakarnchua & Pegrum (2015). When learners were asked to create an augmented reality campus tour, the real-world outcome of the project led to increased interest and engagement. Lastly, freeing learners from the physical constraints of the classroom setting, technology-mediated TBLT practices (e.g., asynchronous CMC namely forum, email, blog) allow more time for learners to process their language output before sharing it, which in turn encourages learners to produce more grammatically accurate and complex language (Reinders, Lakarnchua, & Pegrum, 2015). The increased processing time enables learners to proofread and self-correct their language output and raises their attention to various linguistic features in online communicative contexts, such as in digital games (Reinders & Wattana, 2015).

There has been a proliferation of technology-mediated TBLT studies documenting innovative practices in S/FL classrooms in the past two decades; however, the majority of these focus on classroom practices of individual teachers with enlightening, yet often not transferrable or generalizable findings. This limitation provided the motivation for the current study to synthesize qualitative data from recent technology-mediated TBLT studies to systematically inform research and practice. Table 1, which is presented in the 'supplementary materials' document due to the word limit, collates the background, research methods, and major findings of the 16 primary studies that are included in this qualitative synthesis representing a range of technology-mediated TBLT practices.

The 16 studies listed in Table 1 represents various technology-mediated TBLT practices in a range of cultural backgrounds. Among the 16 studies, three studies report technology-mediated TBLT practices in primary and secondary school contexts (Tanaka, 2005; Park, 2012; Whyte & Alexander, 2014) whereas the rest of the studies describe TBLT in digital settings in universities. Regarding the types of technology-mediated tasks, both writing and speaking tasks are discussed. Writing tasks include email exchange (Appel & Gilabert, 2002; Park, 2012), open-ended forum task (Tanaka, 2005), blog writing task (J. Chen, 2012; Rashid et al., 2017), writing tasks on Wikispaces and Weebly (J. Chen & Brown, 2012), online texting/chatting tasks (Freiermuth & Huang 2012; Zwaard & Bannink, 2016), and information gap tasks (Payant & Bright, 2017; Solares, 2014). Speaking tasks include video-recording speaking tasks (Kirkgöz, 2011; Lai, Zhao, & Wang, 2011), oral presentation (Appel & Gilabert, 2002; Tsai, 2011), interview (J. Chen, 2012), and videoconferencing (Zwaard & Bannink, 2016). Technology-mediated tasks which focus on multiple language skills include watching podcasts (Park & Slater, 2014), watching television shows (Abrams, 2016), and interactive whiteboard (IWB)-supported tasks (Whyte & Alexander, 2014). Based on the findings reported in Table 1, in general, learners had a positive perception towards communicating (both in written and spoken forms) online and they were able to engage in meaningful communications with their peers using a range of communicative strategies, although some students were still passive in interacting online with native speakers of English.

The studies on technology-mediated TBLT discussed in this section represent a wide range of innovative practices for different levels of S/FL learners in different cultural settings. Additionally, the online tasks

reported were designed to improve different English skills, especially writing and speaking. Nevertheless, the prominent features that constitute a technology-mediated task are not immediately apparent to TBLT practitioners and S/FL teachers in general. Second, despite the general positive perception by students and teachers, the affordances and limitations of technology-mediated tasks are not thoroughly examined because of the limitations of the research design. The 16 studies adopt either a qualitative or mixed-methods design and thus, the findings are bound to be limited by a small sample size and a limited number of tasks/lessons observed. Findings in these studies, despite being insightful, are difficult to generalize from to inform TBLT practices in other contexts. Third, while TBLT is an extensively researched area in S/FL studies, research on technology-mediated TBLT is still in its infancy. It is not until the last decade that researchers have begun to explore the potential of technology in task design and implementation. The above limitations of current technology-mediated TBLT call for a systematic literature review on the topic. With the adoption of GT as the methodology, the findings of the current qualitative research synthesis aim to identify prevalent themes reported in technology-mediated TBLT studies to inform future research work on this topic.

Methodology

This section outlines the steps taken to identify the relevant studies to be included in this research synthesis and the inclusion criteria for selecting the appropriate studies to be analyzed. Steps taken to identify related literature follow those suggested by T. Chen (2016). Next, we describe the use of GT as the methodology for this qualitative synthesis.

For the current synthesis study, primary research from the following sources was selected: (a) digital libraries and databases, (b) major refereed journals in English Language Education and CALL (including open access journals), (c) the World Wide Web, and (d) primary studies published as book chapters which suit the remit of this study.

Step 1: Identifying Keywords for Conducting Literature Search

The following keywords were used to search for the relevant literature from sources (a) to (d):

1. task-based language teaching, task-based language learning and teaching, task-based learning, task-based instruction, task-based approach, communicative tasks
2. task-based language teaching (and the interchangeable items in (1)) + S/FL
3. task-based language teaching (and the interchangeable items in (1)) + technology, computer-mediated, computer-assisted language learning, CALL, distance learning + S/FL

Step 2: Literature Search on Digital Libraries Using the Keywords

Literature search on the primary studies related to S/FL technology-mediated TBLT was performed on the following digital libraries:

1. JSTOR
2. Educational Resource Information Center (ERIC)
3. Social Science Citation Index (SSCI)
4. Academic Search Ultimate (EBSCO HOST)
5. Project Muse
6. Directory of Open Access Journals (DOAJ)
7. Arts & Humanities Citation Index
8. Cambridge Core
9. Linguistics and Language Behavior Abstract (LLBA)
10. Science Direct

Step 3: Literature Search on Major Refereed Journals in English Language Education and CALL (Including Open-Access Journals) Using the Keywords

Two types of journals were consulted, namely international refereed journals and regional refereed journals. Altogether, relevant research articles were searched for in the 25 journals listed below:

1. International refereed journals
   - Applied Linguistics
   - CALICO Journal
   - Computer-Assisted Language Learning
   - Computers and Composition
   - ELT Journal
   - English Language Teaching
   - Innovation in Language Learning and Teaching
   - International Journal of Computer-Assisted Language Learning and Teaching
   - Language Awareness
   - Language Learning
   - Language Learning & Technology
   - Language Teaching Research
   - ReCALL Journal
   - Studies in Second Language Acquisition
   - System
   - TESOL Journal
   - TESOL Quarterly
   - The Language Learning Journal
   - The Modern Language Journal
2. Regional journals
   - Asian EFL Journal
   - Asian Journal of English Language Teaching
   - Electronic Journal of Foreign Language Teaching
   - JALT CALL Journal
   - TESL Canada Journal
   - The Asian Journal of Applied Linguistics

Step 4: Literature Search on World Wide Web

Finally, a literature search was performed on Google Scholar using the same keywords in Step 1 to look for journal research articles which were not identified in the previous steps.

Step 5: Evaluating the Literature Using Inclusion Criteria

After a preliminary search of literature on the four sources using the keywords in Step 1, 99 publications were retrieved. These articles underwent a further screening and selection procedure by adopting the following inclusion criteria:

1. The articles report primary research (commentaries and reviews were not included).
2. The articles were published between 1997 and 2017.
3. The articles include at least one type of technology and adopt a well-defined conceptual or theoretical framework of TBLT (see the 'theoretical or conceptual framework related to TBLT' column of Table 1 in the 'supplementary materials' document).
4. The studies were conducted in S/FL classrooms.
5. The articles adopted either a qualitative or mixed-methods research design with a significant

qualitative component to the research.

6. The qualitative analysis of the articles follows the guidelines[2] set by T. Chen (2016, p. 376) which were based on the *Qualitative Research Guidelines of Journals of Language Learning and Technology* and *TESOL Quarterly*. In particular, there should be inclusion of some raw data (e.g., student interviews transcribed verbatim) when authors describe and discuss qualitative findings.

Finally, 16 studies were selected for the current research synthesis (summarized in Table 1). Compared with other qualitative research synthesis studies in the field of CALL, this is an acceptable number of articles to be included (cf., 17 studies were included in Çiftçi & Savas, 2018 and 20 studies were included in T. Chen, 2016). In these 16 articles, six adopted a qualitative research design and 10 adopted a mixed-methods research design. For the latter, only qualitative data is analyzed and reported to align with the nature of research synthesis studies. Amongst the 16 studies, 14 focused on learners of English as an additional language (second or foreign language); the remainder delved into the learning experiences of learners of Chinese (Lai, Zhao, & Wang, 2011) and German (Abrams, 2016) as a foreign language. Despite the lopsided focus on studies on learners of English as a second or foreign language, the search result is reminiscent of the fact that there is an overwhelming emphasis of CALL research on learners of English as an additional language (Sauro, 2016). At the same time, we acknowledge the predominant attention to technology-mediated TBLT studies in ESL and EFL contexts as a limitation of the present study.

Research Synthesis and Grounded Theory

For the purpose of this study, we opted to analyze findings from qualitative research because of their emphasis on reporting naturalistic classroom innovations of technology-mediated TBLT. It has been argued that CALL studies which adopt 'sociocultural, postmodern theories' and 'employ qualitative methodologies or mixed approaches' are more likely to generate findings with high ecological validity (Stickler & Hampel, 2015). Additionally, while quantitative findings from CALL studies are important, there has been an array of meta-analyses which has summarized the results (Grugurović et al., 2013; Lin, 2015). To garner insights from the qualitative data of these studies, qualitative meta-synthesis (McCormick et al., 2003; Thorne et al., 2004), is used to 'reveal deep insights into disparate literature for future research' (T. Chen, 2016, p. 387) and synthesize research findings from individual studies into 'a more abstract level in which multidimensions, varieties, and complexities are disclosed' (Çiftçi & Savas, 2018, p. 281).

To capture such complexities, grounded theory (GT) is used to analyze the qualitative findings because its aim is to explain educational phenomena through analyzing qualitative data, which matches the purpose of the current study (Hadley, 2017). GT is defined as a methodology which comprises a set of 'systematic yet flexible guidelines for collecting and analyzing qualitative data to construct theories from the data themselves' (Charmaz, 2014, p. 1). To operationalize GT, several key concepts need to be clearly defined:

1. *Categories*: Groups of 'instances' or codes which encompass similar features or characteristics (Willig, 2013, p. 70). Categories can be analytical (high-level categories) and descriptive (low-level categories). They are formed as a result of emergent analysis of data through a coding process.
2. *Initial coding*: At the early stage of fracturing data, speed, open-mindedness, and spontaneity are of paramount importance (Charmaz, 2006). Charmaz argued that the task at hand in this initial stage of line-by-line coding is to get fresh insight from the data; therefore, 'working quickly can spark your thinking a spawn a fresh view of the data' (2006, p. 48).
3. *Focused coding*: It is defined by Charmaz (2006) as 'using the most significant and/or frequent earlier codes to sift through large amounts of data' to form preliminary analytical categories (p. 57).
4. *Axial coding*: To gradually build up an emergent theory, axial coding is essential because it allows

researchers to investigate and make explicit the relationships between high-level analytical categories and low-level descriptive categories, or 'properties and dimensions of a category' (Charmaz, 2006, p. 60).

5. *Memo writing*: It plays a crucial role in assisting the reflective and analytical process of the researchers. It is 'the fundamental process of researcher-data engagement that results in a "grounded" theory… [It] is the methodological link, the distillation process, through which the researcher transforms data into theory' (Lempert, 2007, p. 245).
6. *Constant comparison method*: It is an inductive data analysis process which aims at generating concepts and theories progressively through comparing coded data with new data (Charmaz, 2006).

For the data analysis procedure of this study, see Figure 1.

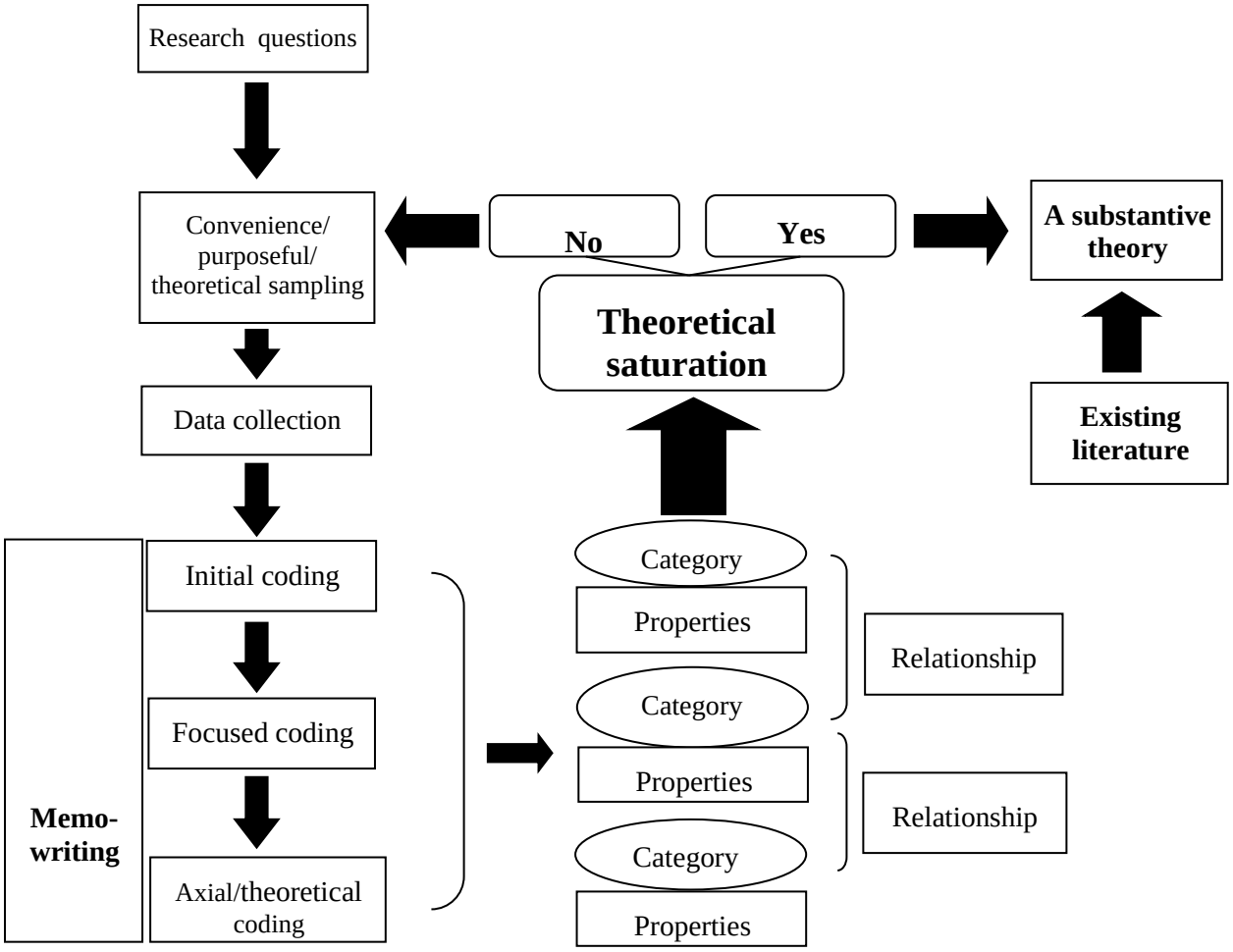

Figure 1. A diagrammatical representation of the data analysis procedure.

Coding of the Literature

Emergent categories and codes from GT analysis following the procedure stipulated in

Figure 1 are summarized in Table 2, which is placed in the 'supplementary materials' document due to word limits. In total, 332 initial codes were created using a qualitative research software, *NVivo*, yielding four conceptual categories, 10 descriptive categories, and 31 sub-categories (Table 2). Examples of codes are included in Table 2 to exemplify codes grouped under each sub-category. To increase reliability of the

coding of the data, the synthesized findings reported in this article were read and commented on by the second author, who specializes in the area of CALL.

Findings and Discussion

Characteristics of Technology-Mediated Tasks

There are two emergent themes that are related to the characteristics of technology-mediated tasks: task characteristics and technology characteristics. Task characteristics discussed in the 16 studies are further divided into six aspects: authenticity of tasks (evident in nine studies), usefulness of tasks (evident in seven studies), task difficulty (evident in five studies), and task sequence (evident in one study). Technology characteristics include two sub-categories: design of technology (evident in six studies) and materials and media (evident in four studies).

The majority of the tasks reported in the 16 studies resemble real-life tasks, including email communication, use of video, and authentic texts which require learners to complete tasks that are relevant to the learners and representative of real-world tasks through making use of authentic materials and negotiating meaning. Regarding task design, some tasks enable learners to communicate in English by taking up the role of an expert, which strengthens the motivation for learners to engage in communication with their peers in the TL. For example, in J. Chen and Brown's (2012) study, the second language learners were asked to create a travel website to introduce places which they were familiar with to other students and teachers. In other instances, the tasks at hand were designed to be as open-ended as possible and focus on content rather than language accuracy (e.g., Tanaka, 2005). Closely related to task authenticity, the technology-mediated tasks were designed to be useful to learners in their future. In some studies, the information students retrieved from the web was transferrable to other academic subjects. In J. Chen (2012), the tasks required students to interview some foreigners in English on the street and write their reflections on a blog. This task, it was claimed, would be useful to learners in their future encounters with friends from foreign countries. In terms of task difficulty, technology-mediated tasks were rated as challenging to students because they required students to discuss complex issues in English, speak in English with foreigners, and supplement ideas with arguments and analysis. Despite the high level of difficulty, tasks were sometimes carefully sequenced according to the levels of difficulty and similarity of themes to provide scaffolding to learners.

As far as technology characteristics are concerned, the studies describe a number of design features. For instance, Tsai (2011) relates how the courseware was designed with the inclusion of bilingual texts to facilitate learners' understanding. The task materials and media were diversely presented in the 16 studies, ranging from asynchronous (e.g., Tanaka's (2005) web forum posts) to synchronous communication (e.g., Freiermuth and Huang's (2012) online texting), from written (e.g., Payant & Bright, 2017) to spoken communication (e.g., Tsai, 2011), from online tools (e.g., Wikispace in J. Chen and Brown, 2012) to hardware (e.g., IWB in Whyte & Alexander, 2014).

Affordances and Limitations of Technology-Mediated Tasks

Five aspects of categories of technology-mediated tasks were noted in the GT analysis, namely (a) facilitating collaborations, interactions, and communications; (b) cultivating positive affects towards language learning; (c) facilitating student-centered learning; (d) developing language skills; and (e) developing non-language skills. Regarding limitations of technology-mediated tasks, two descriptive categories emerged: (a) concerns raised by teachers and (b) concerns raised by students.

Affordance 1: Facilitating Collaborations, Interactions, and Communications

The most prominent code under this descriptive category is that the engagement of learners with the technology-mediated tasks creates opportunities for interactions (evident in 12 studies). Findings from the reviewed studies indicate that cultural and language proficiency differences between learners

provide the impetus for them to interact with one another in the TL using technological means as an attempt to reach a consensus or clarify understanding of words. Learner-learner interactions are not dominated by a number of more competent learners; on the contrary, a clear division of labour among participating students is noted, although in some instances, the learners' lower proficiency in the target language indeed leads to a more passive participation in the online interaction. In the case of communicating using technology with learners from another culture, although differences in terms of social conventions and communication maxims are noted by learners, these differences are perceived positively as they feel more motivated to communicate with learners from another culture using English as the lingua franca. In the studies, not only do technology-mediated tasks facilitate interactions among peers, they also encourage learners to interact with their teacher using technological tools. For example, in Park and Slater (2014), S/FL learners communicate with their teachers using a range of technological tools, including SMS, learning management systems (LMS), and social networking sites. Tsai (2011) remarks that computers can play the role of a personal tutor to facilitate students' autonomous learning. Additionally, technology-mediated tasks provide opportunities for S/FL learners to collaborate with their peers (evident in eight studies). Since the tasks reported in the studies are mostly content-focused and open-ended, there are ample opportunities for learners to engage in negotiation of meaning with one another. Collaboration with peers takes place not only in the process of completing the task, namely exchanging information with peers and providing peer support, but also in post-task evaluation. Furthermore, communication via technological means can facilitate mediation and scaffolding among learners because learners are more willing to ask questions and clarify understanding online, especially when learners are mediating their own interpretations of the task requirements with others (evident in two studies). It is also noted in the synthesis that S/FL learners employ a range of communication strategies (evident in one study) when interacting with their peers, which resemble face-to-face interactions, including avoidance processes, acting in the interest of face instead of the interest of the task, strategy of involvement.

Affordance 2: Cultivating Positive Attitudes Towards Language Learning

The sub-category most noted in the synthesis under this descriptive category is that learners feel more motivated and experience a sense of achievement when participating in technology-mediated tasks (evident in eight studies). Learners in different studies consistently express they are more confident to communicate in the TL online because they are less worried about making mistakes and their peers express interest in their ideas and viewpoints while others are motivated to participate in the tasks because of the new technology. Learners experience a sense of accomplishment because they are given the opportunity to complete the task and solve real-life problems with their peers and the outcomes are observable (e.g., on a blog). Secondly, learners feel less anxious when engaging in communication in technology-mediated tasks (evident in six studies), which corroborates findings from other CALL studies (e.g., digital game play; Reinders et al., 2014). The experience of communicating with their peers is perceived by most learners as secure and casual, which encourages them to participate more actively in the spoken and written discourse. Last but not least, reflections by learners who have engaged in technology-mediated tasks focus on their pleasant task experience (evident in five studies). Learners in the studies repeatedly expressed that their perceived English proficiency improved because they were given the opportunities to interact in the language in authentic situations while others valued the relationships with their peers that were formed in the process of completing the task together.

Affordance 3: Facilitating Student-Centered Learning

Student-centered learning is facilitated in a number of ways, including most notably through the demonstration and evaluation of learning outcomes (evident in seven studies). Learners are placed at the center of the learning and assessment process because their learning outcomes are documented and recorded using technology, primarily video-taped, and shared with their peers, posted on a class blog, and hosted online for family to see. Additionally, peer and self-assessments are embedded in the task designs and made possible through the incorporation of technology. Learners can read and listen to their classmates' learning

outcomes and reflect on their own performance. Similarly, learners review their performance (e.g., in recorded speeches) to identify their weaknesses and strengths; in so doing, learners become more aware of their own mistakes and their learning progress. The second sub-category under this descriptive category is the high degree of freedom that learners enjoy in the technology-mediated tasks (evident in four studies). The high degree of freedom is exemplified in two ways: Firstly, learners are empowered to make a number of decisions, including choosing a topic that is of interest to them and their group members. Secondly, learners feel that they are not limited by the information provided by their teachers but can search for additional information on the Internet. Finally, self-learning and individualized learning (evident in three studies) are promoted in technology-mediated tasks because learners can get acquainted with the language skills at their own pace; learners regard this kind of personalized learning as beneficial to their language development.

Affordance 4: Developing Language Skills

In general, learners in the studies perceive that their language skills improved after participating in technology-mediated tasks, including in the areas of vocabulary, grammar, pronunciation, presentation skills, and the use of sentence patterns (evident in eight studies). The most noted improvement in language skills is associated with speaking and vocabulary. Learners express that their pronunciation improves and they are able to produce more coherent speech; regarding vocabulary development, learners claim that they learn how to use appropriate expressions in a variety of contexts. Another theme that emerged during the GT analysis is that learners' language awareness is increased (evident in four studies). When reflecting on their learning experience in the technology-mediated tasks, learners profess that they become more aware of their own language errors and the use of words and phrases in communication; some learners express that their audience awareness is heightened (e.g., learners modify the difficulty of input when the learning partner cannot understand them). Learners acknowledge improvement in their language proficiency because of the opportunities the tasks provided for learners to practice the TL (evident in two studies). Learners in the synthesized studies comment that the technology-mediated tasks provide ample opportunities for rich information exchange in both written and spoken forms and linguistic output.

Affordance 5: Developing Non-Language Skills

Apart from developing their English language proficiency, S/FL learners in the reviewed studies claim that some of their non-language skills are cultivated through engaging in technology-mediated tasks, namely technological literacy, information literacy, and intercultural literacy. Through their involvement in the tasks, learners develop faster typing speed, become more apt in using certain technological tools (e.g., PowerPoint and Google Image), and develop a more positive attitude towards e-learning. Moreover, learners become more information literate and gain more experience in searching for information online (e.g., using Google Search). Finally, through engaging with multimedia materials of another culture, learners develop their intercultural literacy. For instance, in Abrams (2016), the use of multimodal resources encouraged a group of German learners to decipher socially and culturally embedded meaning in communications. This claim that learners improved their intercultural competence through engaging in technology-mediated tasks is not explicitly discussed in studies focusing on ESL and EFL learners.

Limitation 1: Teachers' Concerns

Two sub-categories emerged from the GT analysis which are associated with teachers' perspectives, including difficulties faced by teachers (evident in seven studies) and dissatisfaction of teachers towards the outcomes of tasks (evident in four studies).

Teachers face a number of difficulties when integrating technological tasks into their language classrooms. While some teachers find it time-consuming to learn how to use new software or technology, others question the cost-effectiveness of learning such technology because it only occupies a short period of time in the lesson. Additionally, there are teachers who complain that more time is

spent on preparing lessons with technological tasks (e.g., uploading videos at home before lessons) and that the learning outcomes of technology-mediated tasks may not always be positive despite the fruitful learning process. The aforesaid difficulties are shared by S/FL teachers because most of the teachers became familiar with technologies much later than their students did. Interestingly, unlike the ESL/EFL teachers, the concerns of the Chinese instructors in Lai Zhao, and Wang (2011) were about their learners' readiness to engage meaningfully with the learning tasks. These teachers perceived that learners' levels of autonomy played an indispensable role in influencing their success in learning independently using online tasks.

Limitation 2: Students' Concerns

In spite of being mostly positive towards technology-mediated language tasks, learners express some concerns related to three issues: (a) lack of explicit grammar instruction (evident in four studies), (b) task completion is time-consuming (evident in two studies), and (c) heavy workload (evident in one study). Learners hold the belief that explicit grammar instruction is an essential part of any S/FL courses and are worried that there is insufficient attention paid to language form in technology-mediated tasks given their meaning-focus orientation. Furthermore, some learners indicate that in some cases too much time and effort is dedicated to other non-language elements of the task (e.g., learners spend a considerable amount of time on designing a website). Lastly, some learners admit that they do not participate as actively as others in the tasks because their ultimate goal is to pass the examination and the course.

Other Emergent Themes from GT Analysis

Following the inductive nature of coding in GT analysis, another emergent category is noted in the process of data analysis—factors affecting effectiveness of technology-mediated tasks. According to the qualitative findings of the synthesized studies, effectiveness of technology-mediated tasks is contingent upon five factors: (a) learners' experience with technology-mediated tasks (evident in six studies), (b) learners' familiarity with task requirements and/or topic (evident in three studies), (c) commitment of peers (evident in two studies), (d) level of autonomy and language proficiency of learners (evident in two studies), and (e) effectiveness of teacher coaching (evident in one study).

One of the crucial factors which affects the effectiveness of technology-mediated tasks is learners' familiarity with using technology in their learning. Learners may become passive and confused when interacting with peers using technological tools when they have no experience doing so in a similar context. Furthermore, technology-mediated tasks may become ineffective when the task requirement and topic is not made clear to the learners. Clear instruction and adequate scaffolding are of paramount importance because learners may be overwhelmed by a number of challenges not known in a traditional language classroom, namely negotiating with their peers using technology and demonstrating learning outcomes using technology. Besides, given the interactive nature of many technology-mediated tasks, the commitment of learners' peers in completing the task is another determining factor in ensuring the effectiveness of the tasks. Additionally, the findings show that learners who exhibit a high degree of autonomy and level of proficiency in the TL reap the most benefits from the technology-mediated tasks. Finally, while learners believe that their English language proficiency improves after participating in technology-mediated tasks, they acknowledge the importance of teachers' provision of scaffolding in the pre-task stage and feedback in the post-task stage.

The Way Forward

While publications documenting research and practice of TBLT have proliferated in the past three decades, technology-mediated TBLT is a relatively new research area in which researchers attempt to synthesize TBLT and CALL. Based on the synthesized qualitative research findings from 16 technology-mediated TBLT studies, an emergent theory is formed:

> Through participating in authentic, meaning-focused, and learner-centered tasks using a plethora of technological materials and tools, S/FL learners interact and communicate in the TL, develop positive affect towards language learning, and develop language and non-language skills. Nevertheless, the effectiveness of technology-mediated tasks is contingent upon a number of teacher, student, and contextual factors.

Based on the above theory and the emergent categories in Table 2, this section puts forward a research agenda and suggests some practical implications.

Research Agenda on Technology-Mediated TBLT

Research Focusing on Tasks

While findings from recent research indicate that technology-mediated tasks are authentic and simulate real-life tasks, much less is known regarding the optimal levels of difficulty of the tasks and how tasks are to be sequenced when supported by technology. From the synthesis, the findings indicate that technology-mediated tasks are perceived by some learners as difficult and challenging; moreover, how technology-mediated tasks are sequenced is only discussed briefly in one study. Future research can investigate learners' perceptions of task difficulties in technology-mediated TBLT and how technology-mediated tasks are sequenced in a way that can provide adequate scaffolding for learners to overcome challenges.

Research Focusing on Learners

Findings from the synthesized studies focus on the positive impact technology-mediated tasks exert on learners' willingness to interact with peers in the TL and their development of proficiency in the TL. Less is known, however, about the added benefits of technology-mediated TBLT on learners' technological, information, and intercultural literacies. In the long run, researchers may be interested in analyzing the relationship between learners' expanding literacies and their development in the TL. Given that most of the findings from the synthesis are positive towards technology-mediated TBLT, another research direction is to focus on exploring learners' difficulties when participating in technology-mediated tasks.

Research Focusing on Teachers

It is highlighted in the synthesized findings that teachers who implement technology-mediated tasks face a number of difficulties, including the use of new technologies and unsatisfactory outcomes. Future studies could look into the various challenges faced by novice and experienced S/FL teachers when designing and enacting technology-mediated tasks; moreover, research into effective professional development opportunities for developing teachers' technological knowledge, technological pedagogical knowledge, and technological content knowledge will be a positive addition to TBLT and CALL literature (Cheng, 2017).

Implications for Implementing Technology-mediated TBLT

Designing Appropriate Tasks

When implementing technology-mediated tasks, S/FL teachers are reminded to design tasks that are authentic and meaning-focused and that provide learners the opportunity to interact with peers in the TL. Additionally, the technology should be appropriate so that it does not divert the learners' attention from learning the TL.

Creating a Supportive and Student-centered Learning Environment

Given the complexity involved in operating a new technology in the process of learning and the higher degree of freedom given, learners are often perplexed if instructions are unclear and teacher scaffolding is inadequate. While it is important for S/FL teachers to capitalize on the affordances of technology-mediated tasks to create a student-centered learning environment, it is equally vital for teachers to provide training,

guidance, and feedback to learners in the pre-task, during-task, and post-task stages.

Developing Teachers' Readiness

S/FL teachers who are interested in implementing technology-mediated tasks should actively enrich their technological knowledge and develop their readiness in using technology in their own classrooms. For teachers who are not familiar with CALL are recommended to implement a weak form of technology-mediated tasks by using free technological tools and incorporating technology in small learning tasks.

It must be acknowledged that the themes generated from the current qualitative synthesis are not comprehensive as only qualitative studies and findings are analyzed. Moreover, given the predominant focus on technology-mediated TBLT studies conducted in ESL and EFL contexts, the findings may not be representative of perceptions of learners and teachers in other educational milieus. However, taking advantage of the inductive and iterative coding method of GT, emergent themes in current research are identified which may serve as a roadmap to inform future TBLT and CALL studies and the synergies thereof.

Notes

1. Originally, primary studies on technology-mediated tasks published between 1997 and 2017 were searched. Nevertheless, after preliminary review of the studies in various sources, the earliest study appropriate for the current research synthesis was found to have been published in 2002. Studies published after 2017 are not included because the study was conducted in 2018.
2. The qualitative research guidelines include the inclusion of (a) a theoretical or conceptual framework, (b) data collection and analysis procedures, (c) findings and discussion, and (d) implications and limitations.

References

*Abrams, Z. I. (2016). Possibilities and challenges of learning German in a multimodal environment: A case study. *ReCALL*, *28*(3), 343–363. https://doi.org/10.1017/s0958344016000082

*Appel, C., & Gilabert, R. (2002). Motivation and task performance in a task-based web-based tandem project. *ReCALL*, *14*(1), 16–31. https://doi.org/10.1017/s0958344002000319

Au, W. (2007). High-stakes testing and curricular control: A qualitative metasynthesis. *Educational Researcher*, *36*(5), 258–267. https://doi.org/10.3102/0013189x07306523

Baralt, M., & Gómez, J. M. (2017). Task-based language teaching online: A guide for teachers. *Language Learning & Technology*, *21*(3), 28–43.

Bygate, M. (2016). Sources, developments and directions of task-based language teaching. *The Language Learning Journal*, *44*(4), 381–400. https://doi.org/10.1080/09571736.2015.1039566

Butler, Y. G. (2011). The implementation of communicative and task-based language teaching in the Asia-Pacific region. *Annual Review of Applied Linguistics*, *31*, 36–57. https://doi.org/10.1017/S0267190511000122

Carless, D. (2009). Revisiting the TBLT versus P-P-P debate: Voices from Hong Kong. *Asian Journal of English Language Teaching*, *19*, 49–66.

Carless, D. (2012). TBLT in EFL settings: Looking back and moving forward. In A. Shehadeh, & C. Coombe (Eds.), *Task-based language learning and teaching in EFL contexts: Research and implementation*. Amsterdam/Philadelphia: John Benjamins.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative research*. Thousand Oaks, CA: SAGE Publications Ltd.

Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Thousand Oaks, CA: SAGE Publications Ltd.

*Chen, J. C. C. (2012). Designing a computer-mediated, task-based syllabus: A case study in a Taiwanese EFL tertiary class. *The Asian EFL Journal Quarterly*, *14*(3), 63–98.

*Chen, J. C. C., & Brown, K. L. (2012) The effects of authentic audience on English as a second language (ESL) writers: A task-based, computer-mediated approach. *Computer Assisted Language Learning*, *25*(5), 435–454. https://doi.org/10.1080/09588221.2011.606224

Chen, T. (2016). Technology-supported peer feedback in S/FL writing classes: A research synthesis. *Computer Assisted Language Learning*, *29*(2), 365–397. https://doi.org/10.1080/09588221.2014.960942

Cheng, K. (2017). A survey of native language teachers' technological pedagogical and content knowledge (TPACK) in Taiwan. *Computer Assisted Language Learning*, *30*(7), 692–708. https://doi.org/10.1080/09588221.2017.1349805

Çiftçi, E. Y., & Savaş, P. (2018). The role of tellecollaboration in language and intercultural learning: A synthesis of studies published between 2010 and 2015. *ReCALL*, *30*(3), 278-298

Doughty, C. J., & Long M. H. (2003). *The handbook of second language acquisition*. Oxford, UK: Blackwell Publishing Ltd.

Duman, G., Orhon, G., & Gedik, N. (2015). Research trends in mobile assisted language learning from 2000 to 2012. *ReCALL*, *27*(2), 197–216. https://doi.org/10.1017/S0958344014000287

Ellis, R. (2009). Task-based language teaching: Sorting out the misunderstandings. *International Journal of Applied Linguistics*, *19*(3), 221–246. https://doi.org/10.1111/j.1473–4192.2009.00231.x

*Freiermuth, M. R., & Huang, H. (2012). Bringing Japan and Taiwan closer electronically: A look at an intercultural online synchronic chat task and its effect on motivation. *Language Teaching Research*, *16*(1), 61–88. https://doi.org/10.1177/1362168811423341

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Hawthorne, NY: Aldine de Gruyter.

González-Lloret, M., & Ortega, L. (Eds.). (2014). *Technology-mediated TBLT*. Philadelphia, PA: John Benjamins.

Grgurović, M., Chapelle, C. A., & Shelley, M. C. (2013). A meta-analysis of effectiveness studies on computer technology–supported language learning. *ReCALL*, *25*(2), 165–198. https://doi.org/10.1017/S0958344013000013

Hadley, G. (2017). *Grounded theory in applied linguistics research: A practical guide*. London: Routledge.

*Kirkgöz, Y. (2011). A blended learning study on implementing video recorded speaking tasks in task-based classroom instruction. *TOJET: The Turkish Online Journal of Educational Technology*, *10*(4), 1–13.

Kumaravadivelu, B. (2006). TESOL methods: Changing tracks, challenging trends. *TESOL Quarterly, 40*(1), 59–81. https://doi.org/10.2307/40264511

Lai, C., & Li, G. (2011). Technology and task-based language teaching: A critical review. *CALICO Journal*, *28*(2), 498–521.

*Lai, C., Zhao, Y., & Wang, J. (2011). Task-based language teaching in online ab initio foreign language classrooms. *The Modern Language Journal, 95*(Supp. 1), 81–103. https://doi.org/10.1111/j.1540-4781.2011.01271.x

Lempert, L.B. (2007). Asking questions of the data: Memo writing in the grounded theory tradition. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. 245–264). London: Sage Publications Ltd.

Levy, M. (1997). *CALL: Context and conceputalisation*. Oxford: Oxford University Press.

Levy, M., & Stockwell, G. (2006). *Call dimensions: Options and issues in call*. Mahwah: Lawrence Erlbaum Associates

Lin, H. (2015). Computer-mediated communication (CMC) in L2 oral proficiency development: A meta-analysis. *ReCALL, 27*(3), 261–287. https://doi.org/10.1017/S095834401400041X

Long, M. H., & Crooks, G. (1993). Units of analysis in syllabus design–The case for task. In G. Crooks & S. M. Gass (Eds.), *Tasks in pedagogical context: Integrating theory and practice* (pp. 9–54). Clevedon, UK: Multilingual Matters.

MacIntyre, P. D., Clément ,R., Dörnyei, Z., & Noels, K. A. (1998). Conceptualizing willingness to communicate in a L2: A situational model of L2 confidence and affiliation. *The Modern Language Journal, 82*(4), 545–562.

McCormick, J., Rodney, P., & Varcoe, C. (2003). Reinterpretations across studies: An approach to meta-analysis. *Qualitative Health Research, 13*(7), 953–944. https://doi.org/10.1177/1049732303253480

Oskoz, A., & Elola, I. (2014). Promoting foreign language collaborative writing through the use of Web 2.0 tools and tasks. In M. González-Lloret, & L. Ortega (Eds.), *Technology-mediated TBLT: Researching technology and tasks* (pp. 115–148). Amsterdam, the Netherlands: John Benjamins.

*Park, M. (2012). Implementing computer-assisted task-based language teaching in the Korean secondary EFL context. In A. Shehadeh & C. A. Coombe (Eds.), *Task-based language teaching in foreign language contexts: Research and implementation* (pp. 215–240). Philadelphia, PA: John Benjamins.

*Park, M., & Slater, T. (2014). A typology of tasks for mobile-assisted language learning: Recommendations from a small-scale needs analysis. *TESL Canada Journal, 31*(8), 93–115.

*Payant, C., & Bright, R. (2017). Technology-mediated tasks: Affordances considered from the learners' perspectives. *TESOL Journal, 8*(4), 791–810. https://doi.org/10.1002/tesj.333

*Rashid, S., Watson, K., & Cunningham, U. (2017). Task-based language teaching with smartphones: A case study in Pakistan. *Teachers and Curriculum, 17*(2), 33–40. https://dx.doi.org/10.15663/tandc.v17i2.167

Reinders, H., & Wattana, S. (2014). Can I say something? The effects of digital game play on willingness to communicate. *Language Learning & Technology, 18*(2), 101–123. http://doi:10.1017/s0958344014000226

Reinders, H., & Wattana, S. (2015). Affect and willingness to communicate in digital game-based learning. *ReCALL, 27*(1), 38–57.

Reinders, H., Lakarnchua, O., & Pegrum, M. (2015). A trade-off in learning: Mobile augmented reality for language learning. In M. Thomas & H. Reinders (Eds.), *Contemporary Task-Based Language Teaching in Asia* (pp. 244–256). London: Bloomsbury.

Robinson, P. (2011). Task-based language learning: A review of issues. *Language Learning, 61*(s1), 1–36. https://doi.org/10.1111/j.1467-9922.2011.00641.x

Sauro, S. (2011). SCMC for SLA: A research synthesis. *CALICO Journal*, *28*(2), 369–391. https://doi.org/10.11139/cj.28.2.369-391

Sauro, S. (2016). Does CALL have an English problem? *Language Learning & Technology*, *20*(3), 1–8.

Scarino, A., & Liddicoat, A. J. (2009). *Teaching and learning languages: A guide*. Australia: GEON Impact Printing Pty Ltd.

*Solares, M. E. (2014). *Textbooks, tasks, and technology: An action research study in a textbook-bound EFL context*. In M. González-Lloret & L. Ortega (Eds.), *Technology–mediated TBLT: Researching technology and tasks* (pp. 79–114). Amsterdam: John Benjamins.

Stickler, U., & Hampel, R. (2015). Qualitative research in CALL. *CALCO Journal*, *32*(3), 380–395.

*Tanaka, N. (2005). Collaborative interaction as the process of task completion in task-based CALL classrooms. *The JALT CALL Journal*, *1*(2), 21–40.

Tavakoli, H., Lotfi, A. R., & Biria, R. (2019). Effects of CALL-mediated TBLT on motivation for L2. *Cogent Education, 6*(1), 1-21. https://doi.org/10.1080/2331186X.2019.1580916

Thomas, M., & Reinders, H. (Eds.). (2010). *Task-based language learning and teaching with technology*. New York: Continuum.

Thomas, M. (2013). Task-based language teaching and CALL. In M. Thomas, H. Reinders, & M. Warschauer (Eds.), *Contemporary computer-assisted language learning* (pp. 341–358). New York: Continuum.

Thorne, S., Jensen, L., Kearney, M. H., Noblit, G., & Sandelowski, M. (2004) Qualitative metasynthesis: Reflections on methodological orientation and ideological agenda. *Qualitative Health Research*, *14*(10), 1342–1365. https://doi.org/10.1177/1049732304269888

*Tsai, S. (2011). Courseware integration into task-based learning: A case study of multimedia courseware-supported oral presentations for non-English major students. *ReCALL*, *23*(2), 117–134. https://doi.org/10.1017/s0958344011000048

*Van der Zwaard, R. V. D., & Bannink, A. (2016). Nonoccurence of negotiation of meaning in task-based synchronous computer-mediated communication. *The Modern Language Journal*, *100*(3), 625–640. https://doi.org/10.1111/modl.12341

Willig, C. (2013). *Introducing qualitative research in psychology* (3rd ed.). Berkshire, UK: Open University Press.

*Whyte, S., & Alexander, J. (2014). Implementing tasks with interactive technologies in classroom computer assisted language learning (CALL): Towards a developmental framework. *Canadian Journal of Learning and Technology*, *40*(1), 1–26.

Yamada, M. (2009). The role of social presence in learner-centered communicative language learning using synchronous computer-mediated communication: Experimental study. *Computers & Education*, *52*(4), 820–833. https://doi.org/10.1016/j.compedu.2008.12.007

Ziegler, N. (2016). Taking technology to task: Technology-mediated TBLT, performance, and production. *Annual Review of Applied Linguistics*, *36*, 136–163. https://doi.org/10.1017/s0267190516000039

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