The Role of Technology in Task-Based Learning: A Meta-Analysis Study

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**Abstract.** This study investigated qualitative data from 27 primary studies which employed a qualitative or mixed-methods design to examine the role of technology in Task-Based learning between 2000 and 2020. The findings of these studies were analysed inductively by adopting the grounded theory (GT) method. The findings revealed 4 strengths of technology in task-based learning in term of: Facilitating Collaborations, Interactions, and Communications; Cultivating Positive Attitudes towards Language Learning; Facilitating Student-Centred Learning; Developing Language Skills, and 2 strains of: Teachers’ Concerns and Students’ Concerns. The findings concluded that one of the crucial factors which affects the effectiveness of technology-mediated tasks is learners’ familiarity with using technology in their learning. However, this study revealed that, technology-mediated tasks become ineffective when the task requirement and topic is not made clear to the learners.

1. Introduction

In the last decade, second language (L2) courses that combine face-to-face learning and applications of technology, in particular computer assisted language learning, have been the subject of numerous studies [1]. These courses usually require students to attend traditional face-to-face classes and to work independently with a synchronous and/or asynchronous communication tool. As existing studies have shown, this blended approach has become the most popular model of technology use in L2 learning, particularly in language programmes where technology components can provide face-to-face instruction with an “efficient use of human and material resources” [2].

L2 courses that incorporate technology in combination with face-to-face instruction have been found to promote L2 learning effectively as they can give students the flexibility to work independently, at their own pace, promoting language acquisition. 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 computer assisted language learning contexts [3].

Answering the phenomena needs, it is the intention of the present study to synthesize qualitative data from 27 primary studies which employed a qualitative or mixed-methods (with the latter, the focus is on qualitative findings) research design to examine the role of technology in Task-Based learning between 2000 and 2020. The findings of these studies are analyzed inductively by adopting the grounded theory (GT) method [4]. This study formulated following research questions: What are the characteristics of technology in task-based learning? And what are the strengths and restraints of technology-mediated tasks reported in these studies?

1. Methodology

This section outlines the steps taken to identify the relevant studies to be included in this meta-analysis study and the inclusion criteria for selecting the appropriate studies to be analyzed followed the criteria suggested by [5].

Finally, 27 studies were selected for the current literature review. Compared with other qualitative research synthesis studies in the field of technology and task-based learning, this is an acceptable number of articles to be included (cf., 17 studies were included in [6] and 20 studies were included in [5]). In these 27 articles, 10 adopted a qualitative research design and 17 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 27 studies, 25 focused on learners of English as an additional language (second or foreign language).

## 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 in task-based learning. The grounded theory (GT) used in this study delivered in Figure 1.



Figure 1 Diagram of Data Analysis Procedure

1. Findings & Discussion

##  Characteristics of Technology in Task-Based Learning

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 27 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 27 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 [7], the second language learners were asked to create a travel website to introduce places which t hey 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 [8]. 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 [7], 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, 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., web forum posts [8]) to synchronous communication (e.g., [9] online texting), from written (e.g., [10]) to spoken communication, from online tools (e.g., Wikispace in [7]) to hardware.

## Strengths and Restraints of Technology-Mediated TBLT

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.

## Strength 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 22 studies). Findings from the 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.

## Strength 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).

## Strength 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.

## Strenght 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).

## Restraint 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.

## Restraint 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.

1. Conclusion

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.

However, 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.

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