

Context, method, and theory in CALL research articles

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Abstract. This paper is an initial report of the data analysis phase of a larger study that traces the evolution of Computer Assisted Language Learning (CALL). All published Research Articles (RAs) from four major CALL journals – *ReCALL*, *CALL*, *Language Learning & Technology (LL&T)* and *CALICO Journal* – from the very first issues to the end of 2019 were downloaded, sorted, and checked to form the final corpus of 426 highly cited RAs. The trends and themes (research contexts, research participants, and theoretical and methodological considerations of the RAs) were all recorded to see how CALL has evolved over time. Primary findings indicate that empirical studies where learners are physically or virtually involved in the process of technology-mediated language instruction dominate the field of CALL research. Authors resort to both quantitative and qualitative methodologies for data collection and analysis, though mixed-methods has gained more weight in the past two decades. Sociocultural theory stands over and above other theories in Second Language Acquisition (SLA) to frame CALL studies. The paper discusses these issues, and problems detected.

Keywords: CALL synthesis, CALL research articles, CALL history, research trends.

1. Introduction

In the past five decades, CALL has been extensively used to support learning, evaluate learners' language, and collect data for both in- and out-of-class inquiry. With the expansion of CALL, dedicated journals have emerged as technology-specialized platforms to invite their readers to keep up with the pace of technological advances through academic RAs. These CALL papers have been combined with

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other academic genres such as book chapters, theses, and conference proceedings to form CALL history over time. This study, as a part of an ongoing PhD dissertation, traces that history by limiting its scope to highly cited CALL-oriented RAs. The question that stands out is how the contextual, theoretical and methodological dimensions of high-impact CALL RAs have changed over time. An ultimate aim of this narrative synthesis is the provision of a roadmap that can complement similar surveys (Gillespie, 2020; Lim & Aryadoust, 2021), tell us where we are now with CALL and how we got here – and, building on that, propose avenues for further research.

2. Method

The pool of data consists of a corpus of 2,397 RAs published in English, from the very first issues up to the end of 2019, in four major CALL journals: *ReCALL*, *CALL*, *LL&T* and *CALICO Journal*. Google Scholar citation metrics were used as a criterion to reduce the pool of papers and produce a manageable final corpus of 426 high-impact RAs (see Choubsaz, Boulton, & Jalilifar, 2020 for the choice of journals and data collection procedure). A coding book was developed to investigate CALL research trends and extract the main themes: research contexts, participants, and theoretical and methodological considerations. The first category covered countries, settings, programs, learning environments, and technology use, while the second recorded the status, age group, proficiency, L1, and L2 of the research participants. For the third category, theoretical and methodological considerations, our synthesis covered the applied methodologies of the studies and the theories/approaches the authors adopt to frame their work. About 10% of the data was coded in two separate rounds by two independent coders and an inter-rater r of 89.8 was attained. Part of the coding procedure was done manually, but our synthesis also made use of *NVivo 12 Plus* and *AntConc* in extracting, categorizing, and merging the principal themes and sub-themes.

3. Results and discussion

The United States is the leading contributor to the field (31% of all publications), English as a Second Language and English as a Foreign Language – ESL and EFL – (32%) are the most used settings, and a huge portion of studies are conducted in university contexts (58%) either in classrooms (28%) or laboratories (15%), with an increasing number of virtual learning environments (26%) in the past two decades. Research participants have the status of learners (68%)

who are predominantly at the intermediate (21%) and advanced (14%) levels of language proficiency and are aged 18-30 (20%). Nearly half of participants speak English (31%) or Chinese (14%) as their first languages; the target language is overwhelmingly English (42%). These findings no doubt partly reflect the reality of learners and teachers as well as research cultures (and the huge input from researchers in the US working in second language environments), though it should be remembered that the journals studied all publish in English, which may encourage studies on this language by researchers sufficiently familiar with it themselves. Another point, more difficult to quantify as rarely explicitly stated, is that many authors/researchers are also teachers in university settings, while few teachers are researchers worldwide; this raises questions about how research reflects typical teaching concerns and practices.

Authors frequently adhere to quantitative methodologies (25%) for data collection and analysis, followed by qualitative (20%) and eclectic methodologies (18%) defined as a combination of qualitative and quantitative data and analysis with no mention of the term mixed-methods. In this, CALL research and SLA in general may be in thrall to Science, Technology, Engineering, and Mathematic (STEM) practices, with extensive use of statistical analysis (notably null hypothesis significance testing, despite the problems noted in journals such as *Language Learning*, and increasingly in psychology and medicine as a whole), partly reflected in the use of terms such as *subject*, *treatment*, and *intervention* (as if the learners were sick), while *control* groups are usually comparison groups, and so on. Power is limited by small sample size, generalizability by the use of intact groups in a single context, and impact by the lack of delayed data collection which is still vastly underused. More encouragingly, truly mixed-method studies (where the same data set is subjected to multiple analysis, rather than simply aligning e.g. post-tests and questionnaires) are on the increase (6%).

The theoretical underpinnings the authors bring to the fore to justify their research are not specific to CALL but are SLA-oriented. Sociocultural theory is the most frequently cited (15%), followed by interactionism (9%), social-constructivism (8%) and collaborative learning (7%), with many others being cited just a few times. In line with the results of [Yim and Warschauer \(2017\)](#), our analysis indicates that 120 RAs (28%), especially the ones published in the 1980's, 1990's, and 2000's, failed to adopt a theory or an approach to frame their work. This lack of theoretical underpinning is perhaps to be expected in the empirical studies favored in RAs, where it often seems to frame a study almost as an afterthought rather than being a major factor inspiring the research itself. Pure theory/position papers are more likely found in books or chapters, or in conference presentations and proceedings,

so there would seem to be a place for theory to drive empirical research or to be tested directly.

An increased interest in theory alongside pedagogical considerations might also help reduce a tendency to seek technological novelty as the main thrust behind a publication. In our survey, text chatting and WeChat (7%), multimedia (5%), digital gaming (4%) and mobile phones (4%) seem to be used quite frequently, these low numbers highlighting the diversity of technology, perhaps for technology's sake. In other words, research should not be driven by noticing (or creating) a new tool and seeing what it can be used for, but by learners' needs, in addition to research gaps. Contrasting this is a possible lack of ambition, with many studies covering well-trod ground and reproducing (rather than replicating) earlier findings, perhaps due to the difficulty of gaining a solid overview of CALL research which is published in so many diverse sources. The 'publish or perish' syndrome is no doubt a contributing factor, with output motivated by career rather than new questions to be supported by original research.

A final issue, not specific to CALL, is the lack of clarity while collecting demographic information of the RAs. In fact, not many papers report all the useful information, or if they do, they report it in ways that are not easy to compare. Even very basic information like the number of participants, age, L1 and L2, context, discipline, the technology used, and what the learners actually did is often missing, incomplete, or of limited use. Two particular problems here are duration and L2 proficiency. The former is variably measured in minutes/hours, sessions, weeks, months, semesters, and years; but a ten-week course may be intensive and include out-of-class work, or involve a one-hour class every second week not including holidays, with only a fraction of the time given over to the main research question. The latter, if stated, may simply be listed as e.g. 'intermediate' with no further indication, which clearly means different things to different people.

4. Conclusions

As the study is still ongoing, definitive results are yet to be reached. However, the increasing number of high-impact publications (204 in the 1980's to 893 in the 2010's) and the preponderance of empirical studies (63%) with learners being physically or virtually present in classrooms, all attest to the healthy state of CALL research after four decades of presence. On the flip side, the increase in output has not resolved some long-standing controversies. This paper has outlined some of these, including methodological problems of design, logistical or contextual

constraints, a lack of theoretical consideration, and poor reporting practices. While many of these issues are long-standing, there is some indication of positive evolution, such as the increase of mixed-methods studies.

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