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SHORT REPORT

Past the Anthropocentric: Sociocognitive Perspectives for Tech-Mediated Language Learning

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Abstract

Researchers in second language acquisition (SLA) have long debated the nature of human cognition and how it affects second language learning (L2L). On the one hand, and largely dominating the field of SLA, is the cognitive approach, which focuses on the brain as the unit for cognitive analysis. On the other hand, sociocultural theory holds that human cognition is mediated by cultural artifacts. These perspectives present significantly different views on interaction, understanding it as either auxiliary or instrumental in the learning process, or "fundamentally constitutive" of learning (Mondada & Pekarek Doehler, 2004, p. 502). Increasingly concerned with the role of technology in language learning, current computer-assisted language learning (CALL) research demands theoretical frameworks that account for the ecological relationship between learners, the tools they use, and the environments they inhabit. This article raises the issue of how anthropocentric perspectives on technology have permeated the field of CALL until now, inhibiting its development. I suggest the need for CALL to adopt a less instrumental, more determinist (Carr, 2010) view of the role that technology plays in language learning, by engaging in sociocognitive research (Atkinson, 2010) that embraces the transformative power that technology has over cognition.

Introduction

Since its conception, the study of language learning and acquisition has been inextricably interwoven with the study of the human mind. Influenced by the Cartesian view of the brain as the self-sufficient source of cognition (Atkinson, 2010; Thorne, 2003), the cognitive approach to language learning focuses on the internal processes of the learner and considers interaction as an instrumental but not essential process to learning. Contrasting with this approach, the philosophical tradition (Benjamin, 1996; Heidegger, 1977; McLuhan, 1967) that views technology, tools, and artifacts as constitutive of human cognition is more closely related to Vygotskian sociocultural theory, which understands "human psychological functions as mediated by social practices and cultural artifacts" (Lantolf & Thorne, 2006, p. 25). These perspectives also present significantly different views on the role that interaction plays in language learning: While the cognitive approach understands interaction as an auxiliary or instrumental

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element in the learning process, the sociocultural approach considers interaction as "fundamentally constitutive" of learning (Mondada & Pekarek Doehler, 2004, p. 502).

For decades, the cognitive approach has largely dominated second language acquisition (SLA) research. A prominent example is Firth and Wagner's (1997, 2007) request for scholars to address the dominance of the cognitive approach over SLA and to conduct research that shows "a significantly enhanced awareness of the contextual and interactional dimensions of language use" (Firth & Wagner, 1997, p. 286). In recent years, researchers have responded to this request by advocating for an integrative approach that rescues the essential role of context, interaction, and the environment in language learning (Ellis & Larsen-Freeman, 2006; Lafford, 2007, 2009; van Lier, 2004). Responding to this call, SLA scholars have recently put forth proposals that more efficiently integrate learner interactions with tools, other humans, and the environments that surround them.

Finding the Right Fit for CALL

Increasingly concerned with the role of technology in language learning, current research in computer-assisted language learning (CALL) requires a theoretical framework that accounts for the ecological relationship between learners, the tools they use, and the environments they inhabit. This section provides an overview of two significant approaches that integrate cognitive and sociocultural theoretical concepts: the sociocognitive approach (Atkinson, 2010, 2014; Harare, 2016) and the sociointeractionist approach (Mondada & Pekarek Doehler, 2004).

The Sociocognitive Approach

Addressing the need for a framework that integrated cognitive and sociocultural approaches, Atkinson (2010) proposed a sociocognitive approach to language learning. Founded on both extended and embodied cognition research, the sociocognitive approach holds that cognition is grounded in the body and that the environment is not instrumental but constitutive of human learning. From these tenets follows that human interactions with nonhuman artifacts are interwoven with cognition; therefore nonhuman mediators (i.e., digital artifacts) and their affordances are crucial to mental development.

As part of his extended and embodied cognition approach, Atkinson (2010) posed three principles that apply to SLA: (a) the *inseparability* principle, (b) the *learning-is-adaptive* principle, and (b) the *alignment* principle. Briefly explained, the inseparability principle states the interconnectedness of mind, body, and world in the process of developing cognition. The learning-is-adaptive principle explains that human survival is based on adaptiveness to complex and unpredictable environments. Finally, the alignment principle poses that humans have natural capacities for interaction, whether with environments, with objects, or with other humans.

What is especially significant to CALL about Atkinson's (2010) sociocognitive approach is that it elevates the role that nonhuman mediators play in human cognition to the place of an object of study. By understanding that nonhuman mediators have a significant role in language learning, we are able to see how digital artifacts can, in fact, be considered objects of study in their roles as interlocutors or mediators. Learner-centered classrooms may start to appear as a thing of the past as we begin to consider

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technologies as interlocutors and even include them as such in conversation analysis (see Thorne, 2017).

The Sociointeractionist Approach

Concerned by the reduced attention that SLA research has paid to situated learning, Mondada & Pekarek Doehler (2004) proposed the sociointeractionist approach to learning. Drawing from sociocultural theory and situated cognition, they explained that both weak and strong views on interaction permeate theories of language learning, with the weak approach to interaction defined as one in which interaction is considered instrumental or has an auxiliary role (Gass & Varonis, 1985; Long, 1983, 1996). Conversely, a strong approach considers interaction "a basic site of experience" and a "fundamentally constitutive dimension" (p. 502) of language learning from either a conversationalist (Bange, 1992; Gajo & Mondada, 2000; Krafft & Dausendschön-Gay, 1994; Pekarek, 1999) or a sociocultural perspective (Hall, 1993; Lantolf, 2000; Lantolf & Appel, 1994; Lantolf & Pavlenko, 1995). Based on these two approaches to interaction, Mondada and Pekarek Doehler (2004) arrive at the conclusion that future second language (L2) research should be guided by the idea that cognition and language acquisition are necessarily *contingent* on context and shaped by social and interactional events.

With interaction being the main site of learning, competence then is not an individual reality but instead an ensemble of contextualized capacities. The methodological implication of understanding competence in this way is that acquisition is best studied by looking at natural interactions and at the contextual settings in which these interactions occur. Although this implication has traditionally been understood in relation to human interaction (i.e., human mediation in regard to learners' zones of proximal development), we can assume that the implication extends to interactions with all agents, including nonhuman mediators. Hence, when digital artifacts play the role of mediators within naturally occurring interactions, methodologically, these artifacts must be also considered objects of study. It is the place of CALL then to advocate for a nuanced study of the mediating roles that digital artifacts play in language learning.

Challenging CALL Paradigms

Inherited from the early days when drill-and-kill exercises were common and technology was frequently used as a replacement for not readily available input (Davies, Otto, & Ruschoff, 2013), CALL research today shows vestiges of the instrumentalist views of technology that prevailed a few decades ago. Instrumentalism, which "downplay(s) the power of technology, believing tools to be neutral artifacts, entirely subservient to the conscious wishes of their users" (Carr, 2010, p. 46), opposes technological determinism, which advocates for the autonomous power of technology in shaping human history (Carr, 2010).

Because instrumentalism favors the view that technology is subservient to its users, it is aligned with the notion that the human mind relies on artifacts only in auxiliary ways. The emphasis on the authority of human agency over technology makes this view inherently anthropocentric in that it minimizes the transformative power of tools over the human mind. For CALL research to move past anthropocentric instrumentalism and into harnessing the transformative power that technology has over language

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learning, we must first recognize the CALL paradigms that have been affected by an overemphasis on the human mind as the source and authority of cognition, and we must question and transform these paradigms to align with our current times.

Technology and the Role of Teachers

A troubling perspective regarding the use of computers for language learning appears in Salaberry (1996), who explained that, because computers are similar in nature to past resources (books, tapes, etc.), they require a teacher to design the pedagogical tasks that go along with them. But as CALL studies increasingly look to understand language learning "in the wild" (Thorne, 2017), we have begun to realize the enormous potential that nonpedagogical technology has to create natural second language learning (L2L) opportunities and experiences.

As CALL scholars continue to develop methodological solutions to conducting research in the wild, it is important that they simultaneously report on the amount and type of teacher involvement in designed tasks. As with the transition from teacher-centered to learner-centered L2 classrooms, it may be the case that an increased use of technology will lead to students relying less on teachers as mediators of learning and more on digital artifacts, with which they will develop direct relationships and interactions. However, teachers must not feel threatened by this possibility. An approach to CALL research that focuses on understanding the mediating affordances of technologies also signifies a higher demand for research that reframes teacher roles and identifies the necessary professional development that will help them transition into these roles. In any case, by promoting a research-based awareness of what human and digital mediators contribute to tech-mediated L2L, we can better prepare ourselves for the professional demands of the future.

Pedagogy Before Technology

Prevalent across CALL research is the demand to provide sound pedagogical justifications for the use of technology in L2L. Most commonly, rationales are founded in sociocultural theory, as well as in the interactionist and cognitivist approaches (Smith, 2017) that have long provided SLA with ready-made frameworks to understand language learning. But these paradigms might not reflect new ways of learning.

One of the fascinating traits of cultural artifacts, and technology more specifically, is that they enable new modes of thinking and learning that were not available before. Thorne (2012) explained that because humans are open systems, their actions and cognition are co-developed with other people and with the environment. Because this co-construction necessarily entails a focus on mediation, which may occur in the form of technological mediation, digitally enabled environments have the capacity to transform human action and, in consequence, "affect developmental processes and outcomes" (p. 21).

These days, the transformative potential of computers has gone beyond extending human memory storage, collecting data, and calculating results at amazing speeds. Computers are now powerful creative and communicative devices (e.g., 3D printers, artificial intelligence, natural language processing) with the potential to modify human minds through continued use. It is important to note then that the affordances of new technologies and the learning processes that accompany them might not always correspond to what we have learned about SLA thus far. If we are to advocate for

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innovative uses of technology in L2L, we must also learn to embrace exploratory research and teaching practices that seek to answer questions we have yet learned to ask regarding how new technologies affect cognitive processes.

Focus on Affordances

Strikingly invisible in CALL research is a focus on the cognitive affordances of technologies. To be clear, while technology *is* commonly explored in relation to L2 pedagogical features (the *CALICO Journal* technological reviews are a great example of this), what I propose is the in-depth exploration of technology types in relation to their affordances *before* thinking of their L2 applications. Although emphasizing the pedagogical opportunities of technology does prepare us to implement it efficiently in the L2 classroom, a less welcome consequence of this emphasis is that it hinders theoretical innovation. By directly engaging with the cognitive processes afforded by technologies *first*, CALL scholars will be better prepared to challenge (or consolidate) the theoretical foundations on which the field is based. In addition, a focus on affordances elevates the technology itself to a valuable research object, a necessary transition if we wish to understand how artifacts mediate and enable human cognition.

In sum, if CALL is to move forward along with the determinist view of technologies shared by today's modern and globalized society, a shift in the theoretical approaches—and perhaps the pedagogical paradigms that underlie its research—is in order. Theoretical frameworks such as the sociointeractionist and sociocognitive approaches are likely to deepen our understanding of the role that technology and digital artifacts play in interactions as sites of learning. By exploring theoretical principles that highlight the role of technology in developing human cognition, CALL researchers can embrace the transformative power of the digital world and become yet better prepared to assist teachers and learners in optimistically transitioning into future learning experiences defined by technology.

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