

Constructivism in Language Learning and Applied Linguistics

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Key Points/Objectives

Objective

To convince the reader that Constructivism is the implicit learning theory underpinning applied linguistics and that there may be advantages in making this explicit

Key Points

- Constructivism as an epistemology and learning theory
- Constructivism in philosophy—essential background
- Constructivism v. Objectivism/positivism
- Constructivism in education—empty theorizing
- Constructivism in language education—a natural connection
- Chomskyan linguistics as a version of objectivism
- Constructivism in first language learning (Tomasello) and second (Ellis)
- Constructivism—name avoidance explained
- Constructivism—a proposed theoretical basis for applied linguistics
- Constructivism—the special case of data-driven learning

Abstract

Constructivism as it applies to learning and teaching is often grouped with student-centered learning, discovery learning, project-based learning, and other “progressive” approaches to education. However, while constructivism is compatible with any of these, it is not the same, but rather a learning theory that may or may not underpin any of them. In this article, constructivism will be presented as both a learning theory, a theory about how learning happens, and an epistemology, a theory of what can be learned or known. We begin with a brief account of its appearance in philosophy and its role in recent general education before looking in more depth at its appropriateness to accounts of language learning/acquisition. The argument is that constructivism is currently our effective though unacknowledged learning theory, the only one that fits with the facts we know about the world and its make-up, and that acknowledging this is of particular importance in applied linguistics and language acquisition research.

Introduction

This article is about the meaning of *constructivism* in the research and practice of language learning. Constructivism will be understood as both an epistemology (a theory of what can be known) and a learning theory (a theory of how it can be learned). The term's meaning in philosophy and education is briefly reviewed and then more extensively documented in language education. The meaning of the word as held by language educators is based on the present writer's experience and supported by keyword counts in the research journal *Applied Linguistics*, a widely used information source in the field. The main proposition is that constructivism is the implicit learning theory underpinning current research in applied linguistics/language learning and that there may be an advantage to making this explicit.

Constructivism as an Account of Learning

If there is any common element amid the widely varying meanings of *constructivism*, in fields as far apart as the philosophy of science and the practice of primary education, it is that what we know of the external world is almost certainly not identical to what is “out there.” Rather it is some sort of representation of the external world that we have made ourselves, whether individually or collectively, out of the bits and pieces of it that we are able to discern.

A concrete example: a child is learning the meaning of the word *cat*. Through numerous instances of seeing cats, playing with cats, hearing others talk about cats, the child gradually constructs an abstract entry for *cat* in his or her lexicon that is not identical to any of the instances s/he has seen or heard about. Nor is it identical to anyone else’s entry, though it probably comes close. The entry has been constructed; it has not been copy-pasted or “transmitted” whole into the subject’s mind; it is an abstract construction that has emerged from all the instances and examples of it s/he has encountered, which continues to be further constructed over a lifetime. Thus it involves the creation of new knowledge, or is “generative” in Chomsky’s terms (though referring to concepts not sentences). In terms of semantics or usage, the word *construct* embraces a range of meanings from “assemble” at one end to “create” at the other, with the constructivist meaning nearer the “create” end of the spectrum. In this sense, constructivism is allied with systems theory, whereby the properties of systems are not necessarily reducible to their constituent elements (as the properties of sodium chloride, NaCl, are different from those of either Na or Cl; or the mean of ten digits is not necessarily any one of those digits).

The alternative to constructivism is objectivism, or positivism, which holds that the world is made of objective realities (like gravity, electricity, the periodic table) that can be fully known through measurement and experimentation independently of what anyone thinks or feels about them. Under objectivism, learning the meaning of *cat* is mainly about getting the standard meaning of the word into a learner’s head.

Maybe not in physics, but in the sciences that involve human life and perception, the size of the objective world is steadily shrinking. For one illustration among many, since at least 1900 it has been known that colors are not inherent properties of objects but of light reflected from different types of materials and merely experienced as colors by particular perceptual and cognitive systems that have evolved in different environments (Hardin, 1988). The rods and cones of the retina, which differ between but also within species, have evolved to make different adaptive use of this perceived color information in particular environments. Peacock hens have more use for color distinctions than bottom-feeding fish. In view of this type of insight, we are “all constructivists now” to some degree, though rarely to the nth degree since the need to function with others in the world requires some level of agreement about its contents and operations. Such agreement is provided by virtue of our having co- (or socially, or intersubjectively) constructed broadly similar representations of the world. We and our con-specifics have similar perceptual and cognitive systems and thus construct it in similar ways. Even “radical constructivists” (e.g., von Glaserfeld, 1995), who believe that almost nothing can be truly known of the real world, nonetheless visit doctors who do not think as they claim to, and are really “social constructivists” like the rest of us.

The opposition of constructivism and objectivism goes back (though not necessarily under the same names) at least as far as Berkely (1709) and Kant (1781/1890) in philosophy and forward to the present day as a dominant theme in the theory and practice of education.

Constructivism in Education

In education research, objectivism has been equated with a “transmission” model of learning, whereby external realities, whether laws of science or rules of grammar, can be imparted to learners wholesale through telling reinforced by practice, repetition, and application. Constructivism has been mixed in with a handful of alternatives to a transmission approach including progressivism, discovery learning, problem-based learning, project and inquiry based learning, learner-centered learning, learning by doing, and others, which are treated as versions of the same thing (e.g., in Kirschner et al., 2006), which they are not. “Discovery” is clearly “of” something that already exists. “Inquiry-based,” and “problem-based” learning can be about the application of known solutions just as easily as the construction of novel solutions. “Project based,” “child-centered” and “progressive” learning are neutral as to the status of the knowledge. While all these approaches suggest a degree of learner autonomy, only constructivism is a learning theory; the others are teaching methodologies, which could be in service of constructivism, behaviorism, or any other underlying learning theory.

In the pedagogical extension of this learning theory, constructivism consistently involves learners grappling in some sense with (more or less) “raw” data and moving it in the direction of abstraction or generality, rather than simply being told the generalization about the data and asked to seek out and remember instances of it. The basic methodology of constructivism is to put learners into situations that will incite them to construct the relevant knowledge themselves or in collaboration with peers. The creation of pedagogically rich learning situations of this kind is, of course, not simple. It goes without saying that constructivism as thus conceived has not been fully realized very often in educational milieus, beyond teacher training college, where it has been the dominant theory at least since Dewey (2016). It was often slogans, not realities, that were learned, however, as summarized in Palmer et al. (2002, p. 178): “Dewey’s ideas were never broadly and deeply integrated into the practices of American public schools, though some of his values and terms were widespread.” One can speculate that the appeal of constructivist approaches was probably less a theoretical commitment and more a response to the rise of universal education in the twentieth century, and a whole new cohort of the population entering the educational system. For less prepared learners, starting from concrete realities (objects, words) or activities

(games, play) seemed more promising to the classroom teacher than starting from theories, laws, rules, and meta-language. In all the assignments on Piaget, Montessori, and Bruner in teacher preparation courses, the underlying challenges of constructivism were rarely faced, its big questions rarely addressed. To what extent and with what type of support can learners truly be said to construct their own knowledge? How can individually constructed knowledge be assessed? How much variation in ways of constructing the world can be tolerated? Is complex knowledge equally amenable to a constructivist approach—can it be as readily applied to the procedure for long division as arriving at a start-up meaning for “dog” or “cat”? Constructivism gradually became an umbrella term meaning “not very academic.”

Predictably, there was little empirical confirmation of the methods or results of constructivist learning over the decades of its implementation in public education (Kirschner et al., 2006), and as a result, the positivist/transmission model of learning remained basically in place, especially at exam time. In educational research publications, the terms *constructivist* and *constructivism* reached a high in the 1990s then virtually disappeared, at least from three of the most cited journals, *Review of Educational Research*, *Educational Researcher*, and *Educational Technology Research and Development* (Fig. 1).

Constructivism in Language

At first glance, language learning looks like it should be fertile ground for a constructivist approach. Language is by definition a human co-construction with no obvious counterpart to electricity or geological structures; there is no obvious “out there” in language. The child language learner by definition takes in language in pieces from the human environment and builds it up into, constructs, a systematic, comprehensible, yet somewhat individual representation of language (no two people have identical lexical or syntactic inventories). Any “right” or “wrong” representations that find their way into the constructions are clearly based on social convention rather than violations of nature. So are we “all constructivists now” in the language business?

In fact, there are two versions of objectivist or transmission-based learning in views of language acquisition: traditional and Chomskyan. Traditionally, pedagogues did not distinguish greatly between laws of nature and rules of grammar (or spelling, word meanings, etc.); like laws of physics, rules of grammar were to be learned and applied through explanation, drill and repetition, with points lost for errors. Now, however, few would support such a simple analogy between the physical world and human language. But a more sophisticated version of linguistic objectivism has arisen, in the form of Chomsky’s “language acquisition device” (LAD, Chomsky, e.g., 1965a). This is paradoxical, in that Chomsky saw his work as a refutation of the behaviorists and other “positivistic linguists, psychologists, and philosophers” (1959; 1965b, p. 2).

For Chomsky, human language learning is a natural and universal process. All users of a language go through similar steps of learning; they acquire native pronunciation, judge similar sentences to be grammatical, understand and produce recursive transformations as if by magic. Chomsky’s argument was that all this skill or ability involved way more learning than could ever be performed by normal perceptual and cognitive means. Indeed “learning” was too weak a word for it, and “language learning” was replaced by “language acquisition.” Offered as proof of the inadequacy of normal learning was the failure of 1960s-era computer simulations to come close to achieving human language ability even for straightforward singular transformations without crashing or exceeding any real time framework (Gold, 1967). The sheer amount of this learning could only happen with the help of a unique language-learning mechanisms, the LAD. Knowledge of language could therefore not be constructed from small pieces but rather

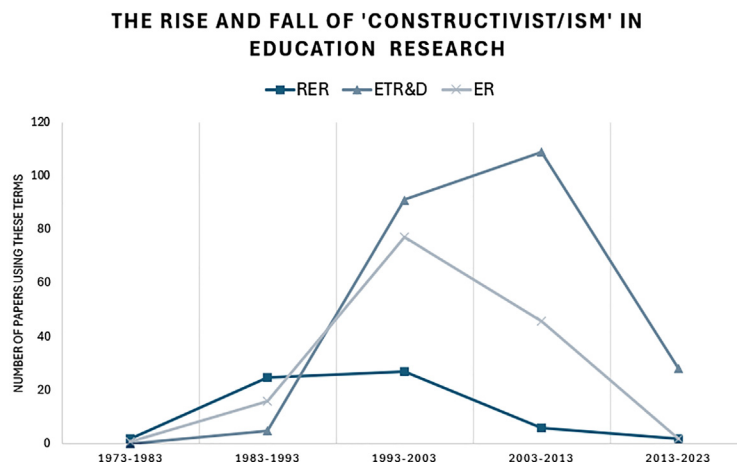


Fig. 1 Number of papers featuring “constructivist/ism” in *RER*, *ETR&D*, and *ER* over 50 years. Compilation of information from public Websites of the education journals *Review of Educational Research* (RER) at <https://journals.sagepub.com/home/rer>, *Educational Technology Research & Development* (ETR&D) at <https://link.springer.com/journal/11423/volumes-and-issues>, and *Educational Researcher* (ER) at <https://journals.sagepub.com/home/edr>.

must be known in large pieces in advance, needing only (relatively) minor input to activate an acquisition process that would then run by itself until the lexicon, grammar, and phonology of the language were fully formed.

In other words, the LAD is an objective reality. It is clearly inside peoples' cognitive systems rather than outside, like gravity or weather, but inasmuch as it is universal (a "universal grammar," or UG) it is effectively an external reality, a piece with any other law of biology. One of Chomsky's main influences was Lenneberg, whose main book was entitled *The Biological Foundations of Language* (1967). Thus linguistics, like biology, is a "hard science" despite the fact that its laws and mechanisms reside within humans. Indeed, what medical doctors learn about human bodies is no less "objective" for being about what happens inside human bodies.

But if LAD theory is a version of objectivism, what then is its pedagogy? Transmission-based learning, the telling of rules to be applied, can not apply here exactly as it does in the sciences because the rules of language do not have to be learned. They are implicit and innate; all that is needed is modest amounts of input and the LAD will do the rest. Indeed this no-learning-necessary approach leaves little place for language pedagogy. It posits that all children achieve perfect grammatical and phonological competence in their native languages. Language pedagogy, on the other hand, is by definition about optimizing language learning and minimizing the risks of partial or inadequate acquisition; it assumes that different degrees of acquisition will take place if acquisition processes are left to themselves, just like running speed or jumping height. So LAD theory is basically a learning theory without a place for learning.

Constructivism in Language Education

Here is where it might be expected the discussion would turn to constructivist response to the generative linguists' model. But, though in some ways this is what happened, the route was not straightforward. The "audio-lingual method," the language teaching extension of behaviorism, basically collapsed under Chomsky's (1959) critique. Yet while a Chomskyan approach had adherents among theory oriented researchers (e.g., White, 1989), it did not result in an explicit Chomskyan pedagogy in either practice or practice-based research. This can be seen in Fig. 2, which compares numbers of research papers in *Applied Linguistics* over five decades employing the terms *grammar* and *UG* (universal grammar). *UG* has only a minor presence in discussions of grammar acquisition over several hundred studies, and where it is present, it has mainly been raised just to be dismissed. Nonetheless, Chomskyan perspectives had a profound though implicit impact on applied linguistics. This came via Stephen Krashen, who argued that since learning happens by itself then teaching is peripheral to language learning. According to Krashen's "Input Hypothesis" and "Monitor Theory," direct teaching cannot affect true language acquisition; the role of the language teacher is therefore reduced to providing learners with input. The input could be minimal, including conversation with other learners in the L2 "communicative" era. The classic example is the idea of free reading for vocabulary development (Krashen, 1989), where the teacher would not even take a role in selecting what to read, since learners could do this better for themselves in line with their own sense of the current state of their LADs. Learners would automatically find their "i + 1"—the input they could roughly comprehend with just enough gaps for acquiring some new words, expressions, and structures. Behind this thinking, but rarely mentioned, was of course the LAD unfolding invisibly in the background. An era followed in language teaching where the role of the teacher was limited to setting up opportunities for incidental learning to occur. "Learning from context" was the leitmotif of the 1970s and 1980s language classroom, whether in first or second language (L1 or L2). Some of the teaching methodologies of this period could hence be termed "learner centered," inasmuch as learners were believed able to make their own choices. But this was not constructivism, though there were superficial resemblances; it was an unusual twist on an objectivist approach to learning—a minor assist to a natural process.

To say there was eventually a strong reaction against Krashen's views among applied linguistics researchers is an understatement. Fig. 3 shows the number of papers in *Applied Linguistics* that discuss his work per decade from 1973. After an initial period of interest



Fig. 2 Papers in AL 1973–2023 that discuss grammar without mentioning UG. Information for Figures 2, 3, and 4 was downloaded from the journal *Applied Linguistics*' public Website at <https://academic.oup.com/applij/>.

THE RISE AND FALL OF KRASHENISM IN AL

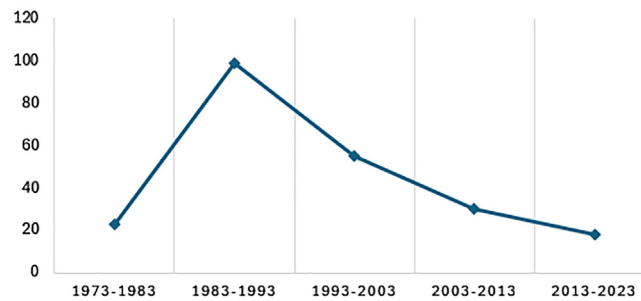


Fig. 3 Papers discussing Krashen's work in AL over five decades.

in the 1970s and 1980s, the majority of discussions of his work are negative after about 1990, and Krashen is little referred to by 2020. The basic problems researchers found in his work were lack of empirical validation and real-world impracticality. It was fairly simple to show that not all learners “learn by themselves” or can simply be let loose in a library to develop their lexicons.

The principled response to Krashen's version of Chomskyan linguistics that was gradually put together was, however, constructivist, whether so named or not. Constructivism, unlike LAD theory or notions of “learning by oneself,” is a proper learning theory, one from which an actual pedagogy can be evolved and empirically validated. It resembles the just-let-it-happen aspects of Krashenism but without the sense that there is no way the process can go wrong or be made more and less effective, i.e., without the dismissal of a role for teaching. The specific idea from Chomsky that researchers wanted to repudiate was that special, quasi-mystical powers are needed for language learning. No, they argued, the normal (and, let us not forget, considerable) mental powers of humans are sufficient, and in addition they are amenable to teaching, testing, and empirical investigation. Two specific pedagogies have been extended out of the basic idea.

The first was inspired by the work of language psychologist Michael Tomasello, whose book *Constructing a Language: A Usage-Based Approach to Language Acquisition* (2005) and an accessible summary piece *Construction Grammar for Kids* (2006) spell out his thinking. Tomasello (2006) argues and gives evidence from years of empirical work (not just theory and polemic) that children neither have nor require pre-existing syntactic categories to help them construct their native languages. Rather, they start from concrete, item-based language structures, including names for things, people, or feelings, and gradually construct more abstract structures “in discourse interactions with other persons.” They do this specifically in the phenomenon of “co-referentiality,” where through joint attention to aspects of the world with knowledgeable others the world is gradually parsed into actors, objects, and events with names and relations. For this they do not rely on an LAD but rather “explicitly and exclusively on social and cognitive skills that children of this age are known to possess” (2006, p. 1). In other words, co-construction can do the whole job.

Tomasello's work is in first language, but his co-constructivism should make even more sense in a second language (L2) than a first, where any LAD would presumably be weaker if existent for many learners who are no longer children. This line of reasoning was brought into L2 acquisition by a language psychologist with, again, an extensive track record in empirical research, Nick Ellis (e.g., 2002). His research demonstrates, both logically and empirically, that L2s are regularly constructed through general cognitive processes, such as generalizing from exemplars, as supported by normal cognitive sensitivity to features of language like frequency, context, and analogy. Ellis (2002, p. 143) set out a research agenda showing that “the typical route of emergence of constructions is from formula” [unanalyzed collocation, “all-gone”], through low-scope pattern [lexically specific combination, “I wanna go” and “I don't see” but not “I wanna see”], to abstract construction [“I wanna + INF,” elaborations added]. Ellis's agenda comes to a measure of fruition in Ellis et al. (2016). Key to it is the role played by *emergence*, by which interactions between simple processes can generate complex structures, as shown in both empirical research and connectionist simulations.

A second strand in recent applied linguistics with a constructivist basis is Lantolf and Thorne's (2006) Sociocultural Theory (SCT). Strongly influenced by the work of Soviet psychologist Vygotsky (e.g., 1934/1986), as was Tomasello, SCT is (in one view) an expansion and rationalization of the communicative approach to language learning through the exploitation of empirically developed concepts from Vygotsky. These include the Zone of Proximal Development (ZPD), the idea of scaffolding, the role in learning of “more knowledgeable others” (KOs), the impact of not just cognition on language but also language on cognition—and the term *sociocultural* itself. This is clearly a rich set of tools to configure as a language pedagogy, possibly more ready-to-go than concepts from Tomasello and Ellis, though many are shared between all three, including co-reference (which can only occur within a ZPD) and emergentism (Lantolf, 2006). If Ellis and colleagues emphasize the “construction” part of co-construction, SCT emphasizes the “co-” part, in a welcome complementarity.

To be noted, however, is that discourse within the SCT tradition does not explicitly call itself *constructivist* (there is no trace of any form of the word in Lantolf et al., 2020). Lantolf (2006) explicitly refuses *constructivism*, and in fact Vygotsky did not call himself a “constructivist.” The designation was applied to Vygotsky's work by later adherents, perhaps because of his constant use of *construct* in his writing where *learn* could have been used (87 occurrences in *Thought and Language*, 1934).

Even where no form of *construct* is employed, Vygotsky's idea of learning is clearly constructivist, in the sense that knowledge is created, not copied, and certainly not merely assembled from pieces. An example is the following passage (1934/1986, p. 127) about concept formation:

The development from lower to higher forms of concepts does not occur through a quantitative increase in the number of connections. It involves the *emergence of a qualitatively new type of formation.*

Vygotsky even specifies where the “new” part of new concepts comes from, the part that is neither copy-paste nor even assembled from exemplars: it comes from the use of concepts to accomplish tasks in the real world in cooperation with KOs within the learner's ZPD—this is the Marxian “materialism” aspect of his work.

What's in a Name?

Post-Chomskyan research and development in applied linguistics is based on a co-constructivist learning theory that posits gradual learning from items to systems without recourse to special mechanisms. Given the battles, misfires, and impositions of the past on applied linguistics, this looks like a hard won theoretical unity. However, just when constructivist thinking seems to triumph, the word itself seems to disappear, and perhaps with it the sense of a unified field of endeavor. As already noted, SCT proponents do not mention constructivism. Tomasello and Ellis both use it liberally, but often as a pair with “usage based” or “emergentist” which may cost focus for many readers. In the literature more broadly, while *constructivism* continues to rise slowly it has been substantially overtaken by “usage-based” and vastly overtaken by “sociocultural.” Fig. 4 shows the number of studies in *Applied Linguistics*, 1973–2023, employing each term.

Constructivism is probably stronger than it looks, though, inasmuch as it tends to be absorbed without mention into the work of emergentists, systems theorists, and chaos theorists who are at bottom versions of constructivists. Still, it is possible that many researchers eschew the term because of its unserious application in education in the twentieth century and a lingering association with postmodernism and radical constructivism.

Does Applied Linguistics Need a Theory?

Perhaps the loss of the term *constructivism* from the conversation is not worth talking about, inasmuch as calling language learning constructivist just means that it is similar to other kinds of learning. Or, maybe with the term is lost a worthy reminder of the present theoretical unity of the field. Something that was lost with the expulsion of behaviorism from language pedagogy was a theoretical underpinning. Whatever else it was, behaviorism was a coherent learning theory with a basis in empirical research. Since its demise, applied linguists have been working atheoretically to a large degree, a common complaint (e.g., Meara, 1980). Indeed, “theory building” was once a topic in applied linguistics (e.g., Beretta, 1991) sometimes with a specific recommendation to look at constructivism (McGroarty, 1998). More recently the matter has not seemed urgent. Dewaele (2019, p. 71) feels that although “[a]ppplied linguistics has been a battleground for ... different theoretical bases, ontological positions, epistemological priorities and

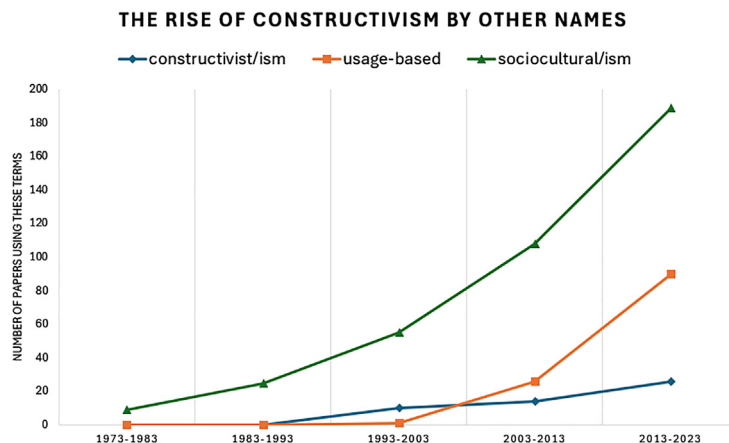


Fig. 4 Variants of constructivism in AL over five decades.

methodological preferences,” he is presently more aware of the benefits of diversity. Lantolf (1996) seems to follow this reasoning in a piece on theory building entitled, “Let all the flowers bloom!” which could relate to the absence of the term *constructivism* in his work.¹

The benefits of having theories in sciences are worth reviewing. They help with the formation of research questions; they reveal gaps in what is known; they promote the cumulativeness of findings (particularly in meta-analysis); they distinguish between distinct types of discourse, like experimental and anecdotal. They show links between different branches of an applied science that share an underlying theoretical basis—a possible example being the usage-based and SCT branches of applied linguistics discussed above. Being clear about an underlying basis in constructivism of the communicative, input, interactionist, and information-processing approaches to language learning could clarify similarities and differences in these approaches. At the very least, having a theory lets you know when a “paradigm shift” may be under way.

The Special Case of Data-Driven Learning

An approach to the computer-assisted language learning (CALL) branch of applied linguistics that adopts an explicitly constructivist learning theory and pedagogy is data-driven language learning (DDL). DDL accepts the theory of usage-informed and exemplar-based learning, but extends it into a pedagogy, which proposes that language patterns have more chance of being noticed and incorporated if the exemplars are assembled and sorted in various ways by text-processing computer software such as concordancers. Two recent meta-analyses conducted explicitly within a constructivist framework and validating the strength of a constructivist/DDL pedagogy are Boulton and Cobb (2017) and Lee et al. (2018).

Conclusion

Constructivism is a learning theory that proposes that everything we learn is constructed from input rather than copied whole from input (the first pages of the article unpack this distinction). With this understanding, the rest of the article argues that while constructivism is known by many names and has had undesirable associations with (1) an extreme version of its basic idea (radical constructivism) and with (2) a dilettante version of its basic idea in teacher training institutions, it is nonetheless, in the form of socio-constructivism, the learning theory that most educated people currently assume to be true, though implicitly, and is the unstated theory underpinning ongoing research and development in the field of applied linguistics. The piece ends with a summary of the benefits to making Constructivism the explicit basis of our field.

References

- Beretta, A. (1991). Theory construction in SLA: Complementarity & opposition. *Studies in Second Language Acquisition*, 13(4), 493–511.
- Berkeley, G. (1709). *An essay towards a new theory of vision*. Jeremy Popyat.
- Boulton, A., & Cobb, T. (2017). Corpus use in language learning: A meta-analysis. *Language Learning*, 65(2), 1–46.
- Chomsky, N. (1959). Review of verbal behavior by B.F. Skinner. *Language*, 35, 26–58.
- Chomsky, N. (1965a). *Aspects of a theory of syntax*. MIT Press.
- Chomsky, N. (1965b). *Language and mind*. Cambridge University Press.
- Dewaele, J.-M. (2019). The vital need for ontological, epistemological & methodological diversity in applied linguistics. In C. Wright, L. Harvey, & J. Simpson (Eds.), *Voices & practices in applied linguistics: Diversifying a discipline* (pp. 71–88). White Rose University Press. <https://doi.org/10.22599/BAAL1.e>
- Dewey, J. (2016). *Democracy & education: An introduction to the philosophy of education*. Macmillan.
- Ellis, N. (2002). Frequency effects in language processing. *Studies in Second Language Acquisition*, 24, 143–188.
- Ellis, N., Römer, U., & O'Donnell, M. (2016). *Usage-based approaches to language acquisition & processing: Cognitive & corpus investigation of construction grammar*. *Language learning monograph series*. Wiley-Blackwell. <https://doi.org/10.1515/cog-2017-0132>
- Glaserfeld, E. von (1995). *Radical constructivism: A way of knowing & learning*. Falmer Press.
- Gold, E. (1967). Language identification in the limit. *Information & Control*, 16, 447–474.
- Hardin, C. L. (1988). *Color for philosophers: Unweaving the rainbow*. Hackett Publishing.
- Kant, I. (1781/1890) (Trans. F. Meiklejohn). *Critique of pure reason*. London: George Bell and Sons.
- Kirschner, P., Sweller, J., & Clark, R. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, & inquiry-based teaching. *Educational Psychologist*, 41(2), 75–86.
- Krashen, S. (1989). We acquire vocabulary & spelling by reading: Additional evidence for the input hypothesis. *The Modern Language Journal*, 73(4), 440–464.
- Lantolf, J. (1996). SLA theory building: ‘Letting all the flowers bloom!’. *Language Learning*, 46, 713–749. <https://doi.org/10.1111/j.1467-1770.1996.tb01357.x>

¹Notes On Socio-Constructivism

Lantolf's coolness to *constructivist/ism* can be traced to his belief that Vygotsky was a Marxian and hence a “dialectical materialist” rather than a constructivist, with external reality containing the mind rather than being concocted by the mind. He writes, “Many have mistakenly assumed that Vygotsky's theory is a constructionist theory [... however, given] that SCT is firmly grounded in Marxist historical materialism, means that Vygotsky, like Marx, assumes a single independent material reality” (Lantolf, 2006, p. 726). In fact, in Marx “material” includes “social.” Marx did not deny the reality of ideas (concepts, art, etc.), merely insisted they arise as products of labor within specific social and material conditions, like the ownership of resources and the conditions of labor, rather than the other way around. This view is entirely compatible, and the idea that knowledge is constructed (from material and social realities) flows logically from it. Lantolf's idea of “material” is too narrow.

- Lantolf, J. (2006). Language emergence: Implications for applied linguistics—a sociocultural perspective. *Applied Linguistics*, 27(4), 717–728. <https://doi.org/10.1093/applin/aml034>
- Lantolf, J., Poehner, M., & Thorne, S. L. (2020). In B. VanPatten, G. Keating, & S. Wulff (Eds.), *Theories in second language acquisition* (3rd ed., pp. 223–247). Routledge.
- Lantolf, J., & Thorne, S. (2006). *Sociocultural theory & the genesis of second language development*. Oxford University Press.
- Lee, H., Warschauer, M., & Lee, J. (2018). The effects of corpus use on second language vocabulary learning: A multilevel meta-analysis. *Applied Linguistics*, 40(5), 721–753.
- Lenneberg, E. (1967). *Biological foundations of language*. Wiley.
- McGroarty, M. (1998). Constructive and constructivist challenges for applied linguistics. *Language Learning*, 48(4), 591–622.
- Meara, P. (1980). Vocabulary acquisition: A neglected aspect of language learning. *Language Teaching and Linguistics: Abstracts*, 13(4), 231–246.
- Palmer, J., Bresler, L., & Cooper, D. (2002). *Fifty major thinkers on education (from Confucius to Dewey)*. Routledge.
- Tomasello, M. (2005). *Constructing a language: A usage-based approach to language acquisition*. Harvard University Press.
- Tomasello, M. (2006). Construction grammar for kids. *Constructions*, 1. <https://doi.org/10.24338/cons-452>
- Vygotsky, L. (1934/1986). *Thought and Language*. Cambridge, MA: MIT Press.
- White, L. (1989). *Universal grammar & second language acquisition*. John Benjamins.