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# The impact of usage-based approaches on second language learning and teaching

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*There is little question that learning a language is one of the most complex accomplishments humans achieve.*

*This is true for the first language learner and perhaps even more so for the second language learner.*

(Tyler & Ortega, 2018: 3)

# 1. Understanding language learning from a usage-based perspective

Our knowledge of language comes from experiencing and using it 'as part of a communicatively-rich human social environment' (Ellis & Larsen-Freeman, 2006: 577). All the while, through exposure and use, our cognitive mechanisms are making sense of the frequencies of forms found in the language experience and the meanings to which these forms are put. These cognitive mechanisms are the same ones that we use in learning of any kind. This notion – that we come to know something by using it – is at the heart of usage-based learning. Language knowledge *is* language use.

Usage-based (UB) models of learning applied to language acquisition began to gain ground in the early twenty-first century, particularly in the field of first language acquisition (FLA) (Tomasello, 2003), and, more recently, are gaining traction in second language acquisition (SLA) studies (Bybee 2008; Ellis 2012a). Central to a UB model is the idea that in order to meet social needs, we agree on and use linguistic conventions to create meanings, and that, subsequently, structural conventions *emerge* from these meanings. This is at odds with theories of language acquisition which propose an overarching abstract set of principles from which to create structures, and transcend the distinction of competence and performance found in traditional language acquisition studies (Ortega, 2013).

Tomasello (2013) maintains that children use two types of cognitive skills when first learning and developing language: they begin by figuring out the intentions of their adult caregivers from the linguistic conventions they use (intention-reading), and secondly, they have to look out for repeated patterns of utterances to create abstract schema (pattern-finding). In order to do this, they develop skills of schematisation and analogy. They begin by understanding an entire communicative act rather than individual words or structures. Then, as they experience the same communicative act with the same words and structures (and, indeed, the same communicative act with different words and structures), they map the words and structures onto their understanding of the function. They first become aware of meanings in context and begin by engaging in imperative, declarative, and informative communication using pointing. These gestures involve people, places, and things (agents, locatives, and objects), indicating understanding of entire acts. Children then begin to map utterances onto these agents, locatives, and objects. For the child developing language, the utterance is the smallest unit of linguistic communication. They hear utterances as holophrases (Corder, 1973) or formulas and then learn individual words by figuring out and extracting their meaning in context when repeated in a range of different utterances and shared contexts. From this, by attending to the patterns in the utterances and using skills of analogy, they abstract meaningful grammatical constructions.

When it comes to *producing* constructions, children first put together two single words (word combinations) or holophrases that fit a context; for example, to refer to a bird in a tree they may say ‘*bird tree*’. To begin with, the word combinations like *bird tree* may not be words that have been experienced together in the input, but they have been abstracted individually from the input, as meaningful referents for objects (e.g. from *It’s a bird*, *Look at the bird*, *See the bird in the garden*, etc., and the same for *tree*). They then begin to demonstrate early signs of abstracting grammatical patterns and evidence of ‘slot-filling’ by combining a word like *more* with a range of objects (*more banana*, *more milk*). This is the second stage of a usage-based theory of development where learners have moved from a formula or holophrase to abstraction of a low scope pattern like *more* + object (Ellis, 2003). From this, they progress to abstracting more and more patterns (e.g. *where’s* + noun + *gone*, *I want* + noun), figuring out more variable slots, and moving to verb islands (Tomasello, 1992). This is where children first learn about verb complementation and collocational patterning on an individual verb-by-verb basis, before moving to a wider generalised understanding of the colligational patterns of verbs when they have a larger dataset of evidence from which to abstract. This completes the three steps of usage-based learning from formula/holophrase to a slot-and-frame system and towards a fully abstracted system of constructions. Lieven (2016) has summed up the whole process by saying that grammar is learnt through a continuous process of abstraction where constituency (groupings of words behaving as single units, e.g. determiner + noun, *my house*) and more complex syntax emerge throughout.

Construction grammars and cognitive psychologists situate the learning of language constructions at the centre of the language learning experience. Constructions can range from morphemes to words, phrases, and syntactic frames, and therefore carry varying levels of complexity:

Simple morphemes such as –aholic (meaning ‘being addicted to something’) are constructions in the same way as simple words like nut (meaning ‘a fruit consisting of a hard or tough shell around an edible kernel’), idioms like *It is driving me nuts* (meaning ‘It is greatly frustrating me’), and abstract syntactic frames like Subject-Verb-Object-Object (meaning that something is being transferred).

Wulff & Ellis, 2018: 38

This fully abstracted system is stored on a continuum of formulaicity, from heavily entrenched chunks such as *It is driving me nuts* to the syntactically connected strings such as ‘Subject-Verb-Object-Object’ (Ellis et al., 2015). Wulff & Ellis describe this language knowledge as ‘a huge warehouse of constructions that vary in their degree of complexity and abstraction’ (2018: 39). And so learning a language necessitates learning thousands upon thousands of these constructions, and integral to this knowledge is

**Grammar is learnt through a continuous process of abstraction where constituency (groupings of words) and more complex syntax emerge throughout.**

*The process of language learning is largely determined by frequency – the more often constructions are experienced and understood together, the more entrenched they become.*

an understanding of which of these constructions can go together and which cannot. Simplistically, the process of language learning means first abstracting constructions from the meaningful input and then understanding the relationships between constructions. This is largely determined by frequency – the more often constructions are experienced and understood together, the more entrenched they become. It is predicted that learners subconsciously acquire first the constructions that they come across most frequently in the input that they receive. We will return to frequency in 2. – *Language development*, below.



Turning to learners of languages other than their mother tongue(s) and how they learn introduces further layers of complexity. Second<sup>1</sup> language learners will range in age groups, from school-going children and adolescents to adults or, at the very least, people who already use a first language successfully, and in the twenty-first century, where multilingualism is the norm, the likelihood is that people are learning more than one additional language simultaneously (Douglas Fir Group, 2016). Within a usage-based perspective, language learning for the multilingual learner both converges with and diverges from the first language learning context. In contrast to the child, the second language learner already has a well-developed schematised repertoire for one language. As they learn an additional language, they are not discovering the world for the first time, nor are they developing a social and conceptual understanding of the world. Additionally, they have typically developed problem-solving and explicit learning skills. The learning context is also different. Whereas the naturalistic environment, scaffolded by the adult caregiver, is the norm for FLA, the classroom context is usually the norm for SLA, where, as we shall discuss below, exposure can be limited and even distorted. The child, in the FLA process, begins with a blank sheet and abstracts syntactic categories from usage, while the second language learner begins with an L1 and builds on pre-existing knowledge of slots and frames, along with knowledge of how to combine them and what to put in them. Despite all this, there is evidence to suggest that the process of additional language learning still involves intention-reading and pattern-finding and that it develops along a similar cline from formula to low scope patterns to fully abstracted constructions (Ellis, 2003). Second language learners move from holophrase (e.g. *I'd like to...*) to a low scope, slot-and-frame system (e.g. *I went/walked to the cinema/shop/restaurant*), to a fully abstracted formulaic chunk (*He came to the conclusion that...*).

In summary, according to this model, the acquisition of constructions – the target of learning – is input-driven and depends upon exposure to meaningful form–function relations resulting in a language system which ‘emerges from the statistical abstraction of patterns latent within and across form and function use’ (Ellis, 2012b). The language learner (first or additional) attends to these frequently used form-meaning pairings and they become ‘entrenched as grammatical knowledge in the speaker’s mind’ (Ellis & Ferreira-Junior, 2009: 188). The degree of entrenchment, according to Ellis & Ferreira-Junior (2009), is proportional to the frequency of usage. In other words, there is a direct link between learning and language experience.

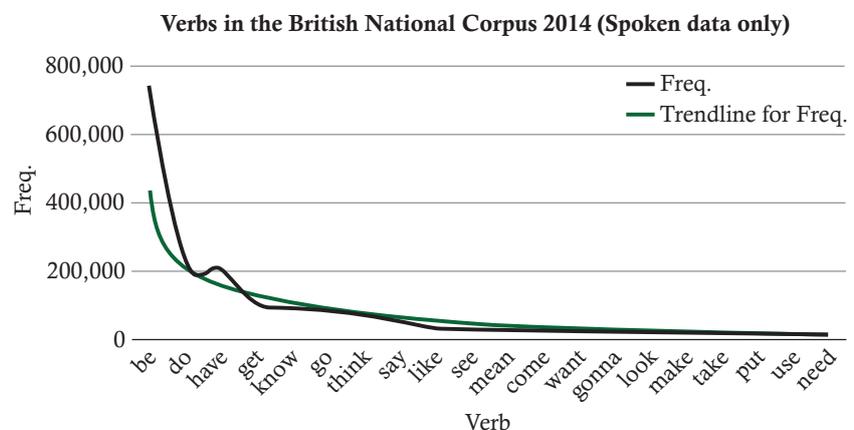
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<sup>1</sup> Note here that we refer to the adult-learning context as SLA whether it is a second or third, etc., language being learnt.

## 2. Language development: the role of frequency and usage

Frequency (of language encounter) therefore plays a crucial role in construction learning. The first time we experience or notice a construction, it is an isolated event which ‘can result in a unitary representation in memory that binds all its properties (i.e. phonological make-up, spelling, etc.) together’ (Wulff & Ellis, 2018: 40). Subsequent encounters activate our pattern-finding mechanisms and strengthen form–function mappings, while at the same time our perceptual mechanisms are attending to the frequency and distribution of the construction in the input. Some constructions are more frequent than others and we have stronger memories for the constructions that we experience more frequently, and our ability to access them from the ‘construction warehouse’ is easier.

Central to UB theory is an understanding of the power law of Zipfian frequency distribution. Zipf’s law (1935) shows how the frequency of words decreases in proportion to the ranking of the word. In natural language the most frequent word is, approximately, twice as frequent as the second most frequent, three times as frequent as the third, etc. Figure 1 shows the top 20 most frequent verbs in spoken British English as represented in the British National Corpus 2014 (Love et al., 2017). The data was gathered between 2012 and 2016 and contains 11,422,617 words from 668 speakers.



► **Figure 1:** Frequency of verb lemma forms in the BNC Spoken 2014 corpus

The verb *be* occurs around 700k times, *do* 231k times, *have* 205k times, *get* 101k times, and so on. The same phenomenon is also true not just of single words, but of constructions, at all levels of abstraction. UB theorists maintain that despite the fact that every learner’s experience of language is unique, learners are statistical and are attentive to forms and functions across the input (Ellis et al., 2016). In other words, by dint of the norms of frequencies of form and function inherent in language use, regardless of the nature of the input, learners should still cognitively experience the core constructions of the language they are learning. This experience may or may not interplay with the language knowledge that they already have from their first language learning experience.

Frequency can be counted in terms of types and tokens. Frequency of tokens counts the number of times each form appears, whereas type frequency counts each different lexical item. Take, for example, the occurrence of verbs in the past simple tense. A search of the 100 million-word British National Corpus (BNC) results in 2,240,920 occurrences (tokens) in total of 9160 different verbs (types).

Freq. rank	Types	Tokens
1	said	177,447
2	did	126,288
3	went	45,632
4	came	44,588
5	took	37,048
6	thought	35,314
7	got	35,230
8	made	34,574
9	looked	27,941
10	saw	24,404

► **Table 1:** Top ten most frequent past simple verb forms in the 100 million word BNC Written and Spoken corpus, showing types and tokens

Among these types there is a frequency ranking. As the results show, *said* is the most frequently occurring past simple verb form, followed by *did*, *went*, etc. However, a closer look at constructions containing these past simple verbs shows that not all of these verbs occur in the same types of constructions. For example, in the constructions, verb + object (VO) or verb + locative (VL), not all verbs will be able to fill both verb slots (e.g. *said/did/took* + object, but not *said/did/took* + place (locative), and conversely, *went* + locative but not *went* + object). So, while *said* is the most frequently occurring past simple verb form, it is not the most frequently occurring form in a VL sequence.

There is a frequency ranking in constructions too. Not all constructions are equally frequent, and learners figure this out from the input. As well as being sensitive to the probabilities of lexical items in sequences, they are also sensitive to the frequencies of the sequences themselves. Much of the research on learner language development to date has centred on verb–argument constructions (VACs). It holds that the verb is the predominant predictor of sentence meaning over other word classes because it is central to basic human experiences (someone causing something, moving something somewhere, doing something, having something, affecting something, changing something). Some human experiences are more common and universal than others and, therefore, some patterns will inevitably be more frequent and salient than others (Goldberg, 1995). Studies of constructions are often centred around the verb for this reason. It has been shown that while each verb in a construction contributes to the individual meaning of a single occurrence, the meaning of the verb in the construction is usually central to the meaning of the

construction (Perek, 2015). So, in a verb locative construction, the verb slot involves movement to place, for example, *go/walk/run/skip* (to) somewhere. In usage-based terms, the VAC inherits its schematic meaning from conventionalised and repeated form-meaning mapping based on all of the examples heard in use (Ellis et al., 2016).

Extensive research into VACs has demonstrated that the types of verbs occupying the verb slot of any construction also has a Zipfian distribution (Bybee 2008; Goldberg 2006; Ellis et al., 2016). As we saw in Figure 1, there is one verb which takes the largest share of the distribution. This verb, along with the other most frequently occurring verbs in the verb slot, are prototypical of the *meaning* of the construction. For example, in the VL construction movement to place, *go* is the prototype verb, followed by *come*; in a VOO construction (verb + object + object), involving transfer of object, *give* is the prototype, followed by *send*. When learners come across subsequent verbs found in the same syntactic contexts, or slots, in the input, they already draw on the prototype from which to infer meaning. These prototypes are ‘the hubs in the construction’s semantic network’ (Ellis & Ogden, 2017). An important point for second language learners is that they have previously acquired L1-tuned expectations about VACs (Ellis, 2006) and this can mean that their cognitive processes are affected by transfer and selective attention. Ellis (2006) argues that, for adult learners, for instance, this L1 calibration can bias the cognitive estimations of the learner and, in some instances, blind them to important differences in L2 form–meaning mappings. For Ellis, second language acquisition involves both a process of both construction and reconstruction (where patterns of usage differ between the learner’s L1 and the target language and have to be reconstructed) (Ellis, 2012a).

**Not all constructions are equally learnable contingency and salience also play a part.**

According to Ellis, not all constructions are equally learnable, and it is factors such as L1 transfer and attention that affect their learnability (Ellis, 2006) – contingency and salience also play a part. The strengths of form–meaning mappings are constantly changing. Every time a given pairing is experienced, its association is cemented further, giving it strong contingency. The less reliable this association, the weaker the contingency. This is what happens with homophones and polysemic words. Many words are polysemic, including many high-frequency grammatical constructions in English (e.g. morpheme *-s*), and it is these grammatical morphemes with weaker form–meaning contingency that appear to be more problematic for learners to acquire than open-class constructions (such as nouns and verbs). Another factor is salience. Some aspects of language go unnoticed, particularly in the stream of spoken language, when they are either unnecessary (e.g. the ellipted *Are* in [*Are*] *you going out later?*) or phonologically imperceptible (e.g. past simple ending *-ed*: *I watched TV all evening*) (Ellis, 2017). These are both of low salience. Grammatical function words are highly frequent, and it is these highly frequent words that are often ellipted in naturalistic spoken language input, which may contribute to difficulty in acquiring them.

As we shall discuss below, an understanding of the nature, pervasiveness, and learnability of constructions needs to be made more apparent to language teachers.



### 3. A usage-inspired pedagogy

**Words and grammar are meaningful beyond the sum of their parts.**

Research carried out by cognitive linguists lends evidence to the fact that words and grammar are meaningful beyond the sum of their parts. In other words, when we learn our mother tongue(s), the language structure emerges as a function of the interaction between early-developing perceptual biases and the statistical structures in the input, particularly frequency and variability. However, in instructional contexts such as classrooms, learning an L2 presents challenges of its own, the nature of the L2 input being most relevant. Research has shown that the input which language learners interact with is limited in terms of exposure, time, and richness. Tyler & Ortega (2018) have questioned whether the input that we find in instructional settings is a faithful reflection of constructions and whether it is adequately contextualised. It is fair to say that there is a consistent body of work that points strongly to the acute need for those involved in second language instruction (teachers, material designers, testers, and policy makers) to understand the pervasiveness of constructions (Ellis et al., 2016; Tyler & Ortega, 2018, among others).

Babies do not learn ‘grammar’ as declarative knowledge (i.e. *-ed* is used in the simple past tense with regular verbs in English or we use the subjunctive in Spanish to express hypothetical situations with varying degree of certainty). As humans, we pick up our native language or languages by mapping out the form and the function of constructions while we are engaged in language use, typically with our parents, family, and our social network. In L2 classrooms, the reality of L2 usage is different. However, more could be done to expose language learners to constructions through language chunks and the contexts in which they occur. Chunks are strings of words that perform a function in the context of interaction. How can we know more about these chunks? Fortunately, we have corpora. In the British National Corpus 2014, we find interesting evidence of how L1 speakers use the language in spoken communication. An analysis of the most frequent five-word sequences, or 5-grams, for example, reveals how language is patterned in specific ways to express a complex range of meanings. If we look at the verb *know* – the most common verb in 5-grams – we find the following top ten patterns:

1	I don't know I
2	I don't know what
3	I don't know if
4	you know what I mean
5	I don't know how
6	yeah I don't know
7	I don't know why
8	but I don't know
9	I don't know it
10	well I don't know

We know that the frequency-related distributions of the lexical items of each of the so-called construction islands, highlight ‘their prototypicality and generality of function in these roles and the reliability of mappings between these together conspire to make language learnable’ (Ellis, 2012b: 36). Let’s take now one of the 5-grams above: *I don’t know I*. This sequence of five words (including *not*) occurs 1828 times in the corpus. In relative terms, it means that it is heard 160 times per 1 million words, or in a film script like *Joker*, of 26,000 words, the chances are that *I don’t know I* occurs four times during the film. What is interesting, though, is that the words that follow this 5-gram, apparently unlimited, are in fact both limited and easy to track down, and they include:

- I don’t know I always + verb
- I don’t know I can’t imagine
- I don’t know I can’t remember
- I don’t know I didn’t + verb
- I don’t know I don’t think
- I don’t know I dunno
- I don’t know I don’t (really/even) know + any of the above
- I don’t know I feel like
- I don’t know I haven’t (really) + verb
- I don’t know I just thought
- I don’t know I’ll have to + verb
- I don’t know I’m not sure
- I don’t know I mean I + verb

*I don’t know* has been identified as a multifunctional chunk in everyday discourse that can, among other things, function to mitigate the pragmatic force of an utterance or express uncertainty (Tsui, 1991; O’Keeffe et al, 2007; Grant, 2010). In reality, this high-frequency item is unlikely to be acquired by learners in a language classroom unless there are opportunities to hear or engage in multi-party discourse. More immersive learning environments, such as content and language integrated learning (CLIL) or study-abroad experiences, may offer a much greater chance of experiencing this and other high-frequency chunks. This is because the highest frequency items that we use in discourse are usually borne out of a need to carefully interact as humans so as not to impose upon our fellow interlocutors (O’Keeffe et al., 2020). A classroom struggles to replicate the possibilities and typicalities of these real-life communicative situations.

In an ideal world, the type of language ‘experience’ that is needed in the language classroom is one that reflects a ‘microcosm of meaning’ from the real world outside the classroom, whereby the potential for multiple form–meaning mappings (between one form and several meanings

**A classroom struggles to replicate the possibilities and typicalities of these real-life communicative situations.**

or uses) can be optimised for the learner through experience. Within an instructed context, due to the sometimes limited opportunity for experiencing language across a range of meanings, we are faced with the possibility of incomplete form–meaning mapping in our language classrooms. This can result in isolated learning of individual meanings of polysemic items. From a usage-based perspective, finding commonality and prototypicality of form–meaning relationships is crucial. Focusing on semantic networks can be powerful for vocabulary learning (Tyler & Ortega, 2018) if it is framed in a way that encourages the language learner to operate on a conceptual level of understanding and draw on their higher level top-down skills and understanding of the world, rather than rehearse an arbitrary and unmotivated connection between a form and its meaning. Take for example the word *blow* as defined in Cambridge online dictionary.<sup>2</sup> In this dictionary entry, there are three definitions for the verb, categorised under the senses ‘send out air’, ‘destroy’, and ‘spend’ (*the wind was blowing; his car was blown to pieces; I blew it on a night out*) and three for the noun under the headings ‘hit’, ‘bad event’, and ‘air’ (*a sharp blow to the stomach; losing her job was a severe blow; a blow on the trumpet*). There are multiple contexts and collocates for uses of *blow* but the prototypical, unifying meaning for all of them involves force. Of course, frequencies, distributions, and collocates for each use will vary. But from a pedagogical stance, if we begin with the idea of a prototypical meaning, the whole range of manifestations of use, with their diverse frequencies, nuances of meaning, and collocational and colligational patterns, all map below this one unifying concept. Once the initial form–meaning mapping is abstracted for the most frequently occurring, and therefore most frequently experienced use, all other meanings encountered fall into line.

**Language structure cannot be analysed if it is divorced from meaning, and therefore form cannot be separated from meaning in the learning process.**

This notion of polysemy is not restricted to individual words; it extends to structure, as we saw from the discussion of VACs above. Syntactic patterns carry meaning at a higher conceptual level than the meaning held in the verb (see VOO above and the concept of transfer). Language structure cannot be analysed if it is divorced from meaning, and therefore form cannot be separated from meaning in the learning process. Teaching language must be ‘in the service of meaning making’ derived bottom-up from exposure to constructions and not driven, top-down, by a set of rules to follow (Tyler, 2012). This again underscores the importance of what this means for the learning process: as the learner’s language develops, more and more form–meaning mappings are realised and consequently the learner has an ever-increasing repertoire of devices to choose from to express subtleties of meaning.

We have already discussed the notion that language learning draws on the same cognitive mechanism as any other learning with the implication being that learning is implicit. This, added to the tenet that meaning is central to the acquisition process, raises the question of whether explicit instruction has any place within a UB-driven pedagogy. In other words, if acquisition happens at a subconscious level through meaningful language experience in FLA, many make

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<sup>2</sup> <<https://dictionary.cambridge.org/dictionary/english/blow>>.

a case in SLA that all instruction should be meaning-focused so as to allow the subconscious process of acquisition to take its course (see Ellis, N., 2005, 2011; Ellis, R., 2005; Han & Finneran, 2014; Graus & Coppin, 2016). However, Tyler & Ortega argue that explicit teaching and learning has a place in L2 learning contexts, particularly for adults whose ‘mature cognition is characterised by top-down goals, and the will to regulate self and environment’ (2018: 9). Rouse-Malpat & Verspoor (2018) have tested a form of usage-based language teaching that prioritises the opportunities for learners to come to notice input through exposure and repetition. What this means is that while we know that learning happens implicitly, we need to balance this with the cultural expectation that learning involves understanding and applying a set of rules.

Other important cognitive processes involved in second language learning, as discussed above, such as contingency and salience, can be underpinned by teacher-curated attention to, for example, grammatical morphemes that have weaker form–meaning contingency, (e.g. *-s* third person, *-ed* past tense) or through a focus on form in the context of multiple meanings of a word or pattern. The importance of making *noticing* happen in the language classroom is crucial to the role of the language teacher so as to facilitate learning. However, it is quite under-researched. Even when an awareness of when to focus on form(s) versus meaning is valued in the practice of teaching and teacher education, Graus & Coppin (2016: 572) found that many early career (and practising) teachers, despite teacher-educators’ best efforts to make them aware of the latest research findings, were reluctant to deviate from the traditional model of presenting rules and practising these in limited contexts, ‘a paradigm that largely ignores the intricacies and nuances of language acquisition’.



## 4. Conclusions

Usage-based researchers have argued that L2 teaching needs to create the conditions for the learners' mapping of language forms and meanings by means of 'form–use–meaning mappings' (Rousse-Malpat & Verspoor 2018: 57). This view sets out to go beyond the form–meaning mapping widely researched in L1 learning contexts. Similarly, it recognises the need for L2 classrooms to provide students with opportunities to use language across multiple contexts in ways that bring together the well-established view that communication is essential, and the more radical, usage-based notion that constructions need to be learnt by students by means of abstracting, both deductively and inductively (Tyler & Ortega, 2018), the statistical properties of language. Note that there is here an emphasis on both the structures of language itself and the central role of learning as an individual process that shares cognitive tools widely available to all human beings.

Focus on form has been part of communicative language teaching and task-based language teaching for decades. However, usage-based approaches look at form using a wider perspective. Forms transcend the boundaries of traditional curricula (the passive, *-ing* verbs, etc.) as the emphasis shifts from learnable units as shown in the syllabus to constructions that are learnable by students in a dynamic way during a process where the students choose what is to be taken away every time a form is encountered, analysed, and learnt. In this context, teachers are responsible for creating appropriate scaffolding during lessons, and material designers need to understand the implications of looking at the emerging structure of an L2 as a jigsaw puzzle, the pieces of which need to be put together so as to build competence. Usage-based approaches maintain that it is the learners who choose which pieces need to be part of the jigsaw puzzle. The 'final' puzzle emerges from these choices as the result of a dynamic interaction between cognitive tools and exposure to usage.

While usage-based approaches have successfully contributed to the theorisation on language learning, more research is needed in order to gain a better understanding of how L2 classrooms, across levels and education systems, can navigate new challenges: an emphasis on learners and the cognitive tools at their disposal, the integration of enhanced input in L2 contexts, the design of learning experiences that make the most of the interplay and influence between environmental features and the activity of the cognising system (Ellis, 2019), the question of how L1s can contribute to L2 learning, and, among others, the integration of frequency-related findings in L2 teaching. We conclude by placing the use of corpora and corpus linguistics as central to the discovery of solutions for these challenges, from its role in confirming the pervasiveness of constructions, enhancing the identification of frequencies, by educators and learners alike, to prioritising the creation and curation of meaningful content-rich contexts for language learning.

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