

A holistic, longitudinal, ecological, and usage-based approach to inform language pedagogy

Audrey Rousse-Malpat¹, Marije Michel¹ and Marjolijn Verspoor^{1,2}

¹University of Groningen | ²University of Pannonia

Abstract This contribution links usage-based language views with CDST, showing their complementarity and their application into the Dynamic Usage-Based (DUB) pedagogy. Data from an L2 French case-study with two absolute beginners reveal non-linear development: despite similar backgrounds and endpoints, learners follow unique learning trajectories. This underscores the individuality of language learning within one classroom.

Keywords complex dynamic systems, dynamic usage-based approach, L2 pedagogy

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Corresponding author

Audrey Rousse-Malpat, a.rousse-malpat@rug.nl

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In his contribution Wander Lowie (2026, this issue) recalls how Paul van Geert and Marijn van Dijk inspired the Groningen group to get involved in Complex Dynamic Systems Theory (CDST) around 2004. Around that same time, there was another colleague at the University of Groningen – Heike Behrens – who brought usage-based (UB) views on first language acquisition to their attention. These views were first applied to their own longitudinal developmental L2 studies and later translated to several pedagogical intervention studies. The findings have led to Lowie's conviction that “a holistic, longitudinal, ecological, and *usage-based* [*italics our emphasis*] approach that acknowledges the complexity of the process should guide our investigations into the principles and mechanisms of second language development to inform language pedagogy.” (pp. 1-2). In the contribution at hand, we would like to expand on the assumptions of usage-based views on language acquisition and why they are complementary to CDST perspectives before we discuss how they relate to individual learning trajectories and actual pedagogy.

Early UB studies in the form of longitudinal case studies, such as Behrens (2002), focused on individual development, overgeneralizations, and intra-individual variation in development. They concluded that “[i]f linguistic knowledge is language-specific,

emergent, and usage-based, different experiences should lead to individual differences in linguistic representations” (Behrens, 2021, p. 961). Through such findings, UB became a natural partner of a CDST approach to language development and led to what is now known as *Dynamic Usage-Based* (DUB) language acquisition research (Verspoor & Behrens, 2011). DUB essentially holds that the process of development over time is highly individual and context-sensitive; language development must therefore be studied in individuals and take into account their individual context and language experience. This insight was recently endorsed by the Synergies consortium, a group of 17 scholars from a variety of disciplines, who came to this conclusion across ontological and epistemological differences (Michel et al., 2025). Aligning closely with DUB-perspectives, they formulate as a shared synergy that pedagogy should ‘create optimal conditions for learning in the specific contexts and specific conditions [... and that ...] teaching can no longer focus only on the product (e.g., a written text, a “correct” utterance) but needs to take into account the processes whereby learners get to that product [...] building on the insight that language proficiency is dynamically related to language use.’ (Michel et al., 2025, pp. 99-100). By now, a CDST and/or DUB approach has inspired numerous studies tracing L2 development from individual cases, to small scale and large corpus studies confirming the individual and dynamic perspective on L2 development (cf. Lowie & Verspoor, 2019). However, there is relatively little work that has tested how DUB principles could be translated to L2 instruction. According to Lowie, the teacher’s task is as follows:

Rather than “teaching” languages, the teacher’s task is to create optimal conditions for learning to develop. These conditions should allow individual learners to build on their own learning experiences and encourage them to use language freely in a safe environment (Lowie, 2026, p. 5).

As L2 pedagogues, we agree and would like to expand on these optimal conditions. First of all, we will assume that L2 learning is very similar to L1 learning, where children learn the language through an inordinate amount of exposure and interaction, requiring large numbers of near repetition of similar words and constructions. As Ortega (2015, p. 368) points out “[l]anguage learning is [...] fundamentally the same complex dynamical adaptive systems phenomenon regardless of starting age” because the same basic tasks – segmentation, form-meaning mapping, pattern finding etc. are needed in L2. Therefore, just as in L1 development, the L2 learner needs a great deal of exposure and meaningful interaction that should be fine-tuned to their zone of proximal development (cf. de Bot et al., 2013), but also embrace the three DUB features: frequency, salience and contingency.

In light of this premise, if linguistic constructions (pairings of form and meaning within a pragmatic context) are learned through association as they are “heard and used frequently and therefore entrenched, which is the result of habit formation, routinization or automatization” (Verspoor & Schmitt, 2012, p. 354), the teacher’s main task is

to give students access to meaningful authentic exposure so that they can learn from examples. This can be done with various “texts” such as reading about cultural topics, short stories, video clips, movie segments and so on, all depending on the students’ level and interest. Frequency effects can be achieved by repeating the “text” or by making sure that several “texts” deal with similar topics in which similar linguistic constructions reoccur. Salience can be achieved by trying to create joint attention, for example by emphasizing and carefully articulating a linguistic construction, discussing the meaning or asking questions about the content, pointing out a grammatical form, or adding a gesture or other visual clue, and other focus on form techniques. Contingency can be achieved by offering language in multi-word utterances so learners hear which words belong together. By meeting similar linguistic constructions in similar communicative contexts, learners can recognize form-use-meaning associations. Gestures and visuals can also be considered contingent symbols to help understand the meaning of the L2 expression.

Besides offering meaningful exposure, a ‘DUB approach entails shifting curriculum design from formulating a priori sets of objectives (curriculum as a product) to it becoming an emergent outcome of L2 use’ (Salama et al., in press). Therefore, the teacher needs to accept that language development is experiential, individually owned and non-linear and, accordingly, not all learners will develop in the same manner (cf. Lowie & Verspoor, 2019). A consequence of this approach is that making developmental errors is part and parcel of the developmental process and variability in the use of structures is needed to progress.

By now, there have been several L2 longitudinal, ecological studies within the Groningen group that have traced the effects of a DUB inspired pedagogy compared to more traditional approaches (cf. Gombert, 2022; Rousse-Malpat et al., 2019; Rousse-Malpat et al., 2022). In each of these studies, DUB-taught students outperformed traditionally taught students significantly in most skills and dimensions, most likely because learners were provided with the right context: the input was rich and meaningful, the activities encouraged risk-taking and repetition, the teacher restricted the feedback given to learners to the strict necessary.

In the following, we present data from one specific DUB study with L2 French for absolute beginners, which has proven very effective (Rousse-Malpat et al., 2022). Tracing French rather than English as an L2 for beginners is especially interesting in the Dutch context because learners will have very similar initial conditions in terms of knowledge and previous exposure, and the degree of exposure and meaningful interaction in French is limited to the instructional context. The data presented below are part of a larger longitudinal study (Rousse-Malpat, 2019), which involved 229 Dutch high school students learning French as a foreign language. Students began with French instruction at age 12 (first year of high school) and continued until age 15 (third year of high school). Here we zoom in on two individual learners from the same school, class, and teacher over the three-year period. In other words, we can assume that initial conditions such as starting

L2 proficiency level as absolute beginners and general scholastic aptitude were similar. Also, during the whole process, they were in the same class and, therefore, had the same amount and kind of L2 French exposure.

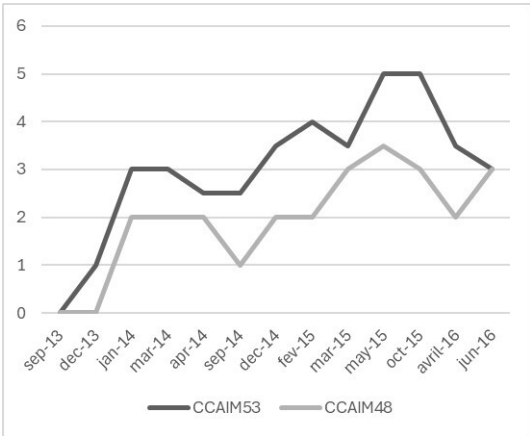
The learners received instruction through the Accelerative Integrated Method (AIM, Maxwell, 2001), characterized by extensive exposure, imitation, playful repetition, and the use of short phrases and sentences derived from narratives. Classroom management talk and the story scripts make use of L2 pared-down language, which helps make contingency issues consistent: For example, different verb forms are avoided early on by using the indefinite pronoun *on* ('one' or 'we') instead of *nous*, *vous* and *ils* ('we', 'you-plural' or 'you-formal' and 'they', respectively), resulting in *je prend*, *tu prends*, *il(s)/elle(s)/on prend* (instead of *nous prenons*, *vous prenez*) where the verb '*prend(s)*' is pronounced consistently the same. AIM uses clear visuals and a gesture for each word; teachers read out the scripts in meaningful chunks with the learners sitting in a circle around the teacher; learners repeat the chunks and gestures, usually in chorus and take part in interactional activities reinforcing the language just practiced.

For this study, writing proficiency was assessed using free-writing tasks in the form of short, simple narratives based on classroom topics at regular intervals. Learners were instructed to produce texts that were engaging, coherent, and as detailed as possible, with an emphasis on clarity for the reader. Writing performances were evaluated holistically by two expert raters using a validated rubric from 0 (almost nothing was written) to 6 (a coherent story with good content and language use) – see Rousse-Malpat (2019) for tasks, instructions and rubrics.

Figure 1 presents the developmental trajectories over three years of the two students (CCAIM 53 and 48). As predicted, their holistic scores were the same initially (both started at 0) and at the end (they reached a 3 out of 6). However, overall, the data confirm a DUB-perspective, first, in that development is not linear: both made notable gains in the first six months, and both fluctuated in their scores up and down, probably related to task topics and the beginnings and endings of holidays. This is remarkable, given that holistic proficiency scores are very global measures of development in that they incorporate both rhetorical skills (content, coherence) and all linguistic subsystems (accuracy, lexical and syntactic skills), and one would expect scores to increase linearly over time as proficiency develops. What is even more interesting is that even though students were similar in many respects and reach a similar endpoint, they clearly follow their own individual trajectories. Student 48 has a much slower start and hardly writes anything the first two times, but catches up with 53 quite rapidly in Jan-14. Student 53 seems to make the most rapid progress with fewer dips and higher levels over time, but at the end, student 53 has a steep dip and ends up the same as student 48 who had shown more dips and fewer peaks all along.

This small peak into the data (see Rousse-Malpat, 2019, for more) allow us to formulate the following conclusions: (1) DUB inspired teaching approaches have demonstrated their potential for effective classroom language learning. When learners are provided with a

Figure 1 The development of holistic French proficiency scores over three academic years of two very similar students



rich and meaningful context individuals become more proficient in their L2. Thereby, meaningful context, is characterized by frequent, salient, and contingent input, playful activities in which constructions naturally recur, and a safe environment that encourages risk-taking and treats errors as part of the developmental process. (2) Even when an instructor offers similar conditions to their students, no learner is the same. Learning is dynamic and developmental trajectories are individually owned. (3) Rather than trying to control learner development, a teacher’s task is to create optimal conditions with lots of exposure and meaningful interaction.

In short: when embracing the chaos of learning we can ‘view variability and temporary regressions as normal features of development rather than instructional shortcomings’ (Salama et al., in press). In such classrooms, teachers recognize and carefully observe individual pathways, trust the learning process, and make development visible to learners. Under these conditions, language learning can be both effective and motivating for future generations not only to continue learning languages but also to teach them.

Personal note

Audrey: “La force tranquille,” the calm and steady force, is a French expression I often think of when I think of Wander. As a student, I was inspired by his teaching, particularly the course New Sound, which he taught even though he had just suffered a serious ice-skating accident. His determination to carry on despite the injury struck me as a powerful reflection of his character. As a colleague, I learned a lot from his combination

of academic rigor and fairness packaged in a remarkably precise choice of words with an underlying sarcastic tone. I loved it. Thanks Wander for this time learning and working together.

Marije: There are not enough individual words I may use to express my non-contingent gratitude to Wander. So let me highlight the few most salient ones: *caring and witty* as academic mentor and friend; *diplomatic but persistent* as a leader in dynamic times; *daunting and encouraging* in height and speed, in particular on skates and bikes. I will miss our frequent FLFLs.

Marjolijn: I think our cooperation and interaction since 1991 has been a dynamic one! First there was a competitive one; I was UD before you, and I received a cactus as present. Then there was a long period where we supported each other, but with lots of variability. Kees sometimes had the impression we had arguments, but we were just trying to calibrate our positions in the CDST paradigm. And then we finally synchronized. Dear Wander, our academic careers have been intertwined and interdependent and I could not have done it without you!

Author contributions

Audrey Rousse-Malpat: conceptualization, writing original draft, writing review and editing; Marije Michel: conceptualization, writing original draft, writing review and editing; Marjolijn Verspoor: conceptualization, writing original draft, writing review and editing.

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Statement of interest

The author(s) have declared that there were no conflicting interests.

Statement of technology use

AI-based generative technology was used to help rephrase a small number of formulations to improve clarity. In the execution of the research that the manuscript reports upon, no AI-based generative technology has been used.

Supporting information

None.

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