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Affordance-based Approach to Language Assessment

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Abstract

This conceptual paper proposes an affordance-based framework for assessment that builds on an ecological paradigm and highlights how linguistic competence is enacted through interaction over time. Six interrelated foci, emergence, reciprocity, resonance, negotiation, disruption and reclamation, and latent trajectories, are introduced as analytic lenses for tracing how learners generate, share, adapt, and revisit linguistic opportunities in action. Through illustrative vignettes and comparative analysis, the paper demonstrates how these foci can be documented and reported through an Ecological Affordance Profile, which integrates micro-level observations, formative records, and summative accounts into a coherent developmental history. Rather than replacing existing forms of outcome assessment, the framework complements them by offering ecological validity and developmental sensitivity, and it provides trace-back capacity when discrepancies arise between test results and classroom evidence. The conclusion calls for reconceptualizing language assessment as an ongoing ecological process that affirms learner agency, sustains growth, and generates a more comprehensive account of communicative competence.

Keywords: affordance-based assessment, ecological approach, language education, dynamic assessment, emergent learning

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Introduction

Language assessment has long been central to educational practice, yet many existing testing paradigms provide only a partial view of learner competence. Standardized tests and classroom exams often rely on static, product-oriented measures such as discrete grammar items or single-shot writing tasks that capture what learners know simultaneously. These formats may underrepresent the processes of learning and the contexts in which language use occurs. As Bachman and Palmer (2010) and McNamara (2000) note, many conventional testing practices decontextualize language, separating it from the communicative situations that give it meaning. This can lead to a gap between what is measured and the situated, dynamic processes through which learners acquire and use language.

Over the past decades, researchers have proposed more ecological perspectives on language learning that emphasize interaction, context, and learner agency. Building on Gibson's (1979) notion of affordances, understood as action possibilities relative to an actor, van Lier (2004) introduced the concept into applied linguistics to move beyond input–output acquisition models. He argued that learners are not passive recipients of input but active creators and seekers of opportunities for meaningful language use. Pedagogical discussions have taken up this perspective as well. For instance, Scrivener (2005) advised teachers to "teach the learners, not the plan," reflecting that lessons frequently take unanticipated directions in response to learner contributions. While ecological perspectives have informed pedagogy, assessment practices have been slower in incorporating these principles systematically.

From an ecological standpoint, affordances are not fixed features of a task but dynamic possibilities that evolve as learners interact with peers, teachers, and tools. If language learning can be understood as a complex adaptive system in which participants and contexts co-develop (Larsen-Freeman & Cameron, 2008; Larsen-Freeman, 2016; Nguyen & Doan, 2025b), then assessment may also need to account for dynamism, emergence, and context sensitivity. This need has become more visible in the era of artificial intelligence, as automated systems can perform strongly on many established tests or generate fluent written texts. In such conditions, the distinctive capacities of human learners may lie less in reproducing static knowledge than in adapting language resources, demonstrating creativity, and engaging in collaborative problem solving (Stockwell, 2024). These capacities are increasingly relevant to discussions of assessment validity.

This paper proposes an affordance-based framework for language assessment to extend ecological perspectives into the evaluation domain. Grounded in ecolinguistics (Fill & Penz, 2008; Kramsch, 2002; van Lier, 2004), the framework shifts attention from the measurement of discrete outcomes toward the documentation of how learners engage with and shape their affordance landscape, understood as the evolving array of opportunities for action in their environment. It introduces six analytic foci: emergence, reciprocity, resonance, negotiation, disruption and reclamation, and latent trajectories, highlighting ways communicative competence may become visible in practice. Each focus is defined, illustrated with classroom vignettes, and connected to ecological theory. The paper also discusses how these foci can be incorporated into assessment design, evidence collection, scoring, and reporting, culminating in an Ecological Affordance Profile proposal. Implications are considered for different assessment levels, from micro-level documentation to formative adjustments and summative reporting, with attention to how such an approach might complement existing outcome-based practices. By combining theoretical grounding with attention to practical implementation, the aim is to suggest how affordance-based perspectives may enrich current approaches to language assessment.

Theoretical Foundations for Affordance-based Assessment

Ecological and Ecolinguistic Origins

The concept of affordance originates in Gibson's ecological psychology, which defines the possibilities for action in the relationship between an organism and its environment (Gibson, 1979). Affordances are neither purely subjective perceptions nor objective features; they are relational potentials that persist independently of whether they are immediately noticed. From this perspective, learning is a process through which individuals gradually expand their sensitivity to the opportunities embedded in their environment (Chemero, 2009; Withagen et al., 2012). van Lier (2000, 2004) adapted Gibson's concept to describe learning affordances as opportunities for language development that exist only when learners take them up. Language learning thus emerges through interaction with the environment rather than through the linear accumulation of input. This ecological orientation challenges models of language acquisition that treat learners as passive recipients. Kramsch (2002) extended the ecological view into the domain of ecolinguistics, arguing that language learning is not simply interactional but also deeply embedded in symbolic, cultural, and social ecologies. These perspectives converge on a relational view of language learning: affordances are enacted opportunities that become educationally meaningful only through learner engagement within specific contexts.

When considered in relation to assessment, these insights suggest that tasks cannot be treated as static instruments that yield scores independent of context. Instead, assessment can be conceptualized as an ecological practice in which learners perceive, negotiate, and act upon possibilities. Therefore, an assessment's validity depends on its technical reliability and the extent to which it affords authentic opportunities for action that reflect the complexity of language use.

It is also worth comparing the affordance-based theoretical orientation with other schools of contemporary thought, where sociocognitive frameworks (Weir, 2005; Mislevy, 2018) conceptualize assessment as a process of evidential reasoning under uncertainty, and Toulmin's model provides the formal logic of such reasoning; both remain within epistemic paradigms that presuppose stable constructs awaiting measurement. Dynamic assessment and learning-oriented assessment shift emphasis toward formative mediation (Carless, 2007), but they still operate on the premise that "ability" pre-exists context. Affordance theory breaks with this lineage by assigning ontological primacy to the relation itself: linguistic ability is not a pre-given trait but an emergent property of ongoing organism–environment interactions (Gibson, 1979; van Lier, 2004; Chemero, 2009). This ontological move is decisive. It implies that the object of assessment is neither a latent trait nor a mediated scaffold, but the dynamic patterns of attunement, action, and resonance that constitute language development. Toulmin's warrants and sociocognitive evidence structures may still operate downstream, but the primary analytic unit is the affordance relation, not the test score or argument chain. This repositioning closes off the possibility of evaluating new paradigms through rubric reliability alone, because reliability itself is reconceptualized as intersubjective attunement to ecological evidence.

Five Constitutive Dimensions of Affordances

Recent work has identified five constitutive dimensions defining an affordance's nature: perceptibility (Ončevska Ager & Anderson, 2025), learning valence, compositionality, normativity, and intentionality (Nguyen, 2022a, 2022b, 2025a, 2025b; Nguyen & Doan, 2025a). These dimensions are not supplementary variables but essential conditions determining whether an affordance exists and exerts educational influence.

First, perceptibility refers to the learner's ability to recognize an opportunity within an assessment context. Although affordances may exist in principle, they remain inert if learners cannot perceive them. For example, a collaborative task may contain opportunities for negotiation, but if these cues are not salient, no affordance is realized. Assessment design must therefore ensure that critical opportunities are made perceptible through appropriate scaffolding and signaling. Second, learning valence addresses the value of an affordance for development. Gibson (1979) emphasized that affordances exist for "good or ill." In assessment, some opportunities may encourage deep engagement while others may foster superficial strategies such as rote memorization. Distinguishing positive from negative valence ensures that assessments promote meaningful growth rather than counterproductive habits. Third, compositionality highlights the structural complexity of many affordances. Some opportunities require multiple conditions to align before they can be realized. For instance, peer feedback tasks only afford collaborative learning if trust, time, and support exist. Where compositionality is high, affordances are fragile and may collapse if any element is missing. Recognizing compositionality enables assessment designers to anticipate the supports needed for opportunities to become robust. Fourth, normativity emphasizes that social and cultural expectations mediate affordances. Even if an action is physically possible, learners may not feel permitted to enact it if it conflicts with established norms. For example, questioning an examiner might be technically possible but culturally inappropriate in some contexts, rendering the affordance inaccessible. Attending to normativity ensures that assessments are designed with fairness and inclusivity in mind (Rietveld & Kiverstein, 2014). Finally, intentionality refers to the degree of deliberation learners engage with affordances. Intentional uptake, such as purposefully seeking clarification, differs from incidental encounters and has more substantial implications for agency and self-regulation (Ushioda, 2014; Zimmerman, 2000). Assessments that foster intentionality measure proficiency and support the development of autonomous and reflective learners.

These five dimensions do not function in isolation. They are interdependent aspects that together constitute the essence of an affordance. Only by examining how they converge can one claim that an assessment truly affords meaningful language learning and performance opportunities. The articulation of these five constitutive dimensions provides the theoretical foundation for affordance-based assessment. This approach reconceptualizes validity and fairness in relational terms by shifting the focus from static products to opportunity structures. It complements existing models of construct validity (Messick, 1989) by embedding learner–environment interactions into the definition of what is being assessed. It extends sociocultural critiques of assessment (McNamara, 2000) by operationalizing how equity, agency, and emergence can be systematically incorporated into design. It also aligns with current demands to assess competencies such as adaptability, collaboration, and creativity, which are difficult to capture through traditional models (Boud & Soler, 2015).

Building on the theoretical account of affordances, it is essential to clarify the relationship between the constitutive dimensions of affordance and the constructs that guide affordance-based assessment. The five dimensions identified in earlier work, perceptibility, learning valence, compositionality, normativity, and intentionality, describe the essential qualities that define when and how an affordance exists in an educational ecology. These dimensions provide the theoretical scaffolding for assessment because they specify the conditions under which opportunities become real, meaningful, and consequential for learners.

However, assessment cannot be based on these abstract dimensions alone. They serve as underlying principles rather than as direct categories of evaluation. In practice, what needs to be assessed is not the dimensions in isolation, but the ways learners interact with and utilize them during classroom activity. The constructs of affordance-based assessment proposed in this paper, emergence, reciprocity, resonance, negotiation, disruption and reclamation, and latency, should therefore be understood as

observable domains that make visible how learners engage with the five constitutive dimensions. For example, a learner's creative emergence illustrates perceptibility and intentionality in action, while reciprocal affordances often reveal a task's normative and compositional conditions. In this sense, the constructs function as assessment lenses that translate the theoretical nature of affordances into tangible phenomena that teachers can document, interpret, and respond to.

By framing assessment constructs as the practical realization of these constitutive dimensions, the framework avoids reducing affordances to isolated features of tasks. Instead, it positions assessment as a dynamic inquiry into how learners perceive, value, and mobilize opportunities across multiple contexts. This approach ensures that assessment remains theoretically grounded while offering educators concrete ways to capture the richness of classroom interaction.

From Outcome-based to Affordance-based Assessments

The article examined 52 assessment plans collected from higher education institutions in both state and private sectors to compare outcome-based and affordance-based orientations. These plans were consulted to explain how assessment is conceptualized across diverse institutional contexts. The institutions remain anonymous because the article's purpose is conceptual development rather than a critical case study.

Each plan was read in detail to identify the principles shaping assessment practice. The analysis looked at stated aims, task types, scoring criteria, and forms of evidence. A set of coding criteria informed by the assessment literature (Bachman & Palmer, 2010; Messick, 1989; McNamara, 2000; Harding, 2014) was used to distinguish orientations. Plans were considered to reflect an outcome-based orientation when they primarily emphasized predefined outcomes, static knowledge, and correctness or framed assessment as certification and ranking rather than as a learning process. This orientation was also evident when learner agency was absent from the design or interpretation of assessment.

It is important to note that categorizing specific orientations as "outcome-based" does not imply that all practices are entirely static. For example, many sampled plans included formative assessment components; some used oral examinations or integrated performance tasks. These forms can, in principle, embody dynamic features, such as interaction, scaffolding, and ongoing feedback. However, in most reviewed plans, even these practices were ultimately structured and interpreted through an accumulatively summative lens. Formative activities were often reduced to preparatory steps toward summative scoring, and oral examinations were frequently standardized to maximize reliability rather than to capture the open-ended nature of interaction. Thus, while traditional plans sometimes contained dynamic elements, these elements were typically subsumed under a framework that still treated performance as a fixed product to be measured.

The analysis combined content analysis, extracting explicit statements about assessment purposes and procedures, with a thematic reading identifying recurring orientations across the corpus. Statements emphasizing objective correctness, comparability, or certification were outcome-based, whereas references to authentic context, learner initiative, or ecological interaction were affordance-oriented. Through several cycles of coding and refinement, these orientations were distilled into the contrasts summarized in Table 1.

This account does not claim to present exhaustive evidence of global practices. Its purpose is to clarify the basis for comparing outcome-based and affordance-based orientations. By acknowledging both the prevalence of outcome-oriented logic and the partial presence of dynamic elements such as formative assessment and oral exams, the analysis avoids overgeneralization and provides a balanced foundation

for the following conceptual framework. Also, Table 1 should not be read as establishing a rigid dichotomy between "traditional" and "affordance-based" approaches. Instead, it provides an analytical lens derived from our examination of existing assessment plans, aiming to highlight differing orientations in a clear and structured way. This table functions as a heuristic rather than a universal classification of assessment systems. Future research may build on this foundation to develop more multidimensional representations that reflect the diversity and complexity of assessment practices across contexts.

Table 1 *Comparison of outcome-based vs. affordance-based language assessment*

Dimension	Outcome-based assessment (based on the iterative analysis of 52 syllabi)	Affordance-based assessment (suggested from affordance theory by Nguyen, 2025a, 2025b)
Core principle	Anchored in accountability and standardization. Learning is defined as meeting published outcomes; fairness may be ideally guaranteed by treating all students under the same conditions.	Anchored in ecology and growth. Learning is defined as engagement with affordances in context; fairness may mean ensuring students can access, perceive, and act on opportunities.
View of knowledge	Knowledge is stable, measurable, and transferable into performance indicators during assessment (e.g., grammar accuracy, rubric descriptors).	Knowledge is constantly emergent, even when only a few conditions of the environment change, and situated, distributed across interaction, resources, and learner agency.
Assessment methods	Standardized exams, scripted oral interviews, fixed rubrics, CEFR-linked descriptors. Example: a 90-minute closed-book end-of-term writing exam with identical prompts across the cohort.	Portfolios, reflective journals, affordance logs, project-based presentations, seminar leadership, peer/self-assessment. Example: a semester-long portfolio of drafts, peer feedback, and self-reflection used to evaluate progress.
Focus of evidence	Achievement of outcomes at a set point in time. For example, in an academic writing course, students must produce a five-paragraph essay demonstrating B2-level accuracy and coherence.	Emergent actions and strategies. For example, in a research diary, students document how they integrate peer and teacher feedback weekly, showing adaptability and creativity beyond a final product.
Interpretation of results	Answers to the "Has the learner achieved the intended outcome?" question. Success may be equated with the mastery of specified objectives.	Answers to the "How is the learner interacting with opportunities, and what potential do they reveal?" questions. Success should focus on adaptability, agency, and creativity that suggest the learners take future learning trajectories, rather than being decided by other stakeholders.
Role of the learner	Primarily, a respondent demonstrating competence relative to outcomes. Example: in oral exams, students answer scripted questions with little scope for initiative.	Active agent who co-constructs assessment. Example: in seminar facilitation tasks, students design and lead group discussions, with assessment capturing how they initiate, negotiate, and sustain learning affordances.
Growth orientation	Growth is cumulative: tracked by the accumulation of achieved outcomes across modules and semesters. For example, progression decisions are based on whether students have met learning objectives in successive courses.	Growth is developmental: traced by documenting how learners expand their capacity to perceive and act on affordances. For example, reflective journals that highlight how students built new strategies from missed opportunities.

(*Continued*)

Dimension	Outcome-based assessment (based on the iterative analysis of 52 syllabi)	Affordance-based assessment (suggested from affordance theory by Nguyen, 2025a, 2025b)
Strengths	It provides clarity, comparability, and accountability, which is useful for certification and accreditation. Many universities integrate some formative components (e.g., mid-term tests, drafts) into this framework.	Captures process and context, supports creativity, collaboration, and adaptability; aligns assessment with a growth mindset and reflective practice.
Risks if overused	Risk of fragmenting learning into checklists and overlooking emergent learning moments. Even dynamic forms like oral exams can be standardized to the point of suppressing interaction.	Risk of inconsistency across cohorts, higher workload for teachers, and difficulty in ensuring reliability without a strong rubric and training.
Illustrative examples	• Closed-book grammar and reading exams are used across many course sections. • Scripted oral interviews with identical questions to ensure reliability at the final exam. • Final essays graded strictly against CEFR descriptors for accuracy and coherence. • Course grades are used to determine progression or scholarships.	• Portfolios containing drafts, peer comments, and teacher feedback documenting evolving performance of affordance negotiation. • Research diaries in which students record weekly decision-making and strategy use. • Community-based projects (e.g., student teams interviewing local businesses and presenting findings). • Seminar leadership where students facilitate discussion and are assessed on agency and collaboration.

In essence, outcome-based assessment typically treats language ability as the achievement of specified standards, a commodity that can be measured against benchmarks at a given time. Its strength lies in providing clarity and accountability for progression and certification, but its focus is primarily retrospective, centered on what learners have already demonstrated. By contrast, an affordance-based approach views language ability as an emergent and situated activity to be understood. It emphasizes how learners perceive, negotiate, and mobilize communication and learning opportunities as they unfold in context (Nguyen, 2022a, 2022b). For example, whereas an outcome-oriented test might ask whether a student can use the past tense correctly in a sentence, an affordance-based assessment would attend to how that student navigates a storytelling activity with peers: whether they improvise strategies when vocabulary is lacking, whether they respond to subtle prompts from others, and whether they contribute to joint meaning-making by helping a peer articulate an idea. Although rarely scored in conventional assessments, such behaviors are central to successful language use and the developmental trajectories that assessment should recognize (Nguyen & Doan, 2025b).

Affordance-based assessment also has the potential to enhance the precision and coherence of formative assessment. Whereas outcome-based formative practices often devolve into an ad hoc collection of strategies that vary by teacher or context, an affordance perspective foregrounds the intentional alignment between observed opportunities and evaluative criteria. This approach reduces arbitrariness and promotes transparency by systematizing the identification of learning actions as they genuinely emerge within the learner's environment. It ensures that assessment is not simply a series of separate, though sometimes meaningfully connected, observations, but a theoretically grounded and coherent process in the dynamic affordances available to each learner. In this sense, validity and consistency

are strengthened by rooting evaluation in the relational and ecological nature of learning opportunities rather than in static measures alone.

Importantly, an affordance perspective does not reject outcome-based assessments outright. Standardized or outcome-oriented tasks remain useful for benchmarking and accountability. Instead, the affordance-based view reframes priorities, urging educators to look beyond test scores and consider how learners engage with and expand the opportunities before them. Throughout the history of education, there has been a recurring call for assessment to be integrated with real learning activities and to support development rather than merely to audit it (Bronfenbrenner, 1979; Darling-Hammond & Snyder, 2000; Rutherford et al., 2025). Affordance-based assessment responds to this call by positioning assessment as both evaluative and generative: it documents current performance while highlighting learners' potential for growth through their interaction with context. The following section introduces the key constructs that operationalize this perspective. These constructs translate the abstract principles of affordance theory into more tangible domains of observation; each is illustrated with classroom scenarios to demonstrate how an ecological orientation can inform assessment practice.

Key Foci of Affordance-based Assessment

The six foci of affordance-based assessment emerged from a layered theoretical grounding and conceptual refinement process. The starting point was the Five-Dimensional Affordance Framework (Nguyen, 2022a, 2022b, 2025a, 2025b; Nguyen & Doan, 2025a, 2025b, 2025c), which conceptualizes affordances regarding perceptibility, valence, compositionality, normativity, and intentionality. These dimensions offer a robust ontology of how opportunities for action are constituted in learning ecologies, yet they are too abstract to be scored or observed directly in assessment practice. A teacher cannot grade "intentionality" in isolation, but intentionality becomes visible when learners negotiate task structures or create new learning opportunities. The recognition that the theoretical dimensions required operationalization for assessment formed the first step toward developing the six foci.

This process was informed by dialogue with ecological and sociocultural theories. Van Lier's (2004) ecological perspective emphasized the need to trace affordances in action, Gibson's (1979) relational ontology underlined their emergent character, and sociocultural theory highlighted the collaborative and negotiated nature of learning (Vygotsky, 1978). Earlier models, such as Anderson's (2015) affordance-oriented lesson planning, provided functional categories for reflection but remained post hoc and did not capture affordances as they unfold in interaction. Reflective engagement with affordance-informed pedagogy (Nguyen, 2022b) further highlighted the gap between affordance-for-action and affordance-in-action. To explore this gap, a conceptual review of anonymized higher education assessment plans was used illustratively, not necessarily as generalized empirical data but as heuristic prompts. These plans showed how outcome-based logics often overlooked dynamic processes such as emergent creativity, reciprocal scaffolding, or recovery from disruption.

Through iterative synthesis across these layers, six vantage points were consolidated as operational foci: emergence, reciprocity, resonance, negotiation, disruption and reclamation, and latent trajectories. Each focus represents a practical lens where multiple affordance dimensions intersect and become observable in classroom interaction. For example, resonance manifests when individual contributions propagate through a group, combining valence, compositionality, and normativity. Negotiation reflects intentionality and normativity when learners reshape task conditions. Latent trajectories highlight temporal aspects of valence and perceptibility as learners revisit earlier opportunities. These foci are therefore not additional theoretical constructs but methodological bridges that render the five dimensions

accessible for assessment. They provide a structured yet flexible way to document language competence development, linking ecological theory with concrete evaluative practice. The foci proposed here, therefore, serve as lenses for self-regulated learning, teaching, and assessment. They highlight what teachers can foster in the classroom and what they can attend to when evaluating student learning, while also providing learners with perspectives for reflecting on their own growth. Each focus is defined below and illustrated with a brief classroom vignette drawn from affordance-based practices. Given the conceptual nature of this paper, these vignettes are provided for demonstrative purposes, rather than as systematic data for empirical analysis. Table 2 at the end of this section summarizes the foci, their definitions, and example indicators.

Affordance Emergence

Affordance emergence highlights learners' capacity to generate or co-create new opportunities for action within the ecology of learning. This focus reflects the convergence of two key dimensions of affordance: perceptibility, which enables learners to notice possibilities not explicitly embedded in a task, and intentionality, which drives them to act deliberately upon those perceptions (Nguyen, 2025a). Emergence, therefore, serves as a practical proxy of these otherwise abstract dimensions. Research in ecological linguistics and complex dynamic systems has long suggested that novel behaviors and patterns arise unpredictably through learner–environment interaction (Larsen-Freeman & Cameron, 2008; Larsen-Freeman, 2016; Ortega, 2014). Empirical studies also demonstrate that learners frequently extend beyond task requirements by developing innovative strategies that reconfigure the activity system, thereby evidencing perceptibility and intentionality in action (Li & Kim, 2016; Ushioda, 2011). Emergence is thus not a theoretical ideal but a recurrent, documentable phenomenon that makes two foundational dimensions of affordance empirically accessible.

Assessment of emergence targets learners' initiative in expanding the affordance landscape. What is assessed is not only whether students achieve predefined outcomes but whether they demonstrate the capacity to create new learning pathways that enhance both individual and collective activity. Observable evidence includes posing questions that reframe the scope of discussion, introducing representational tools such as charts or diagrams to support group coordination, and reorganizing resources in ways that improve task coherence. Documenting these actions allows assessment to capture both the efficiency of learning processes and the room for further development (Nguyen & Doan, 2025c). In other words, when learners can generate emergent affordances, they demonstrate that their current learning is effective and that they possess the potential for continued growth, which aligns directly with the assessment goals for learning (Ushioda, 2011).

To ensure transparency and consistency, affordance-based assessment employs rubrics, but in a form distinct from outcome-based scoring. Instead of prescribing predetermined criteria, the rubric uses qualitative descriptors that characterize degrees of emergent engagement. For example, levels might range from rarely demonstrating initiative beyond instructions to consistently generating transformative strategies that restructure group learning. A parallel scale can also capture responsiveness to the emergent affordances of others, ranging from ignoring opportunities created by peers to consistently adapting and extending them productively. Together, these profiles systemize judgment without reducing it to rigid numerical outcomes. Recording mechanisms include teacher observation logs with timestamps, preserved digital artifacts such as version histories of documents, and learner reflections that provide insight into decision-making. Analytic coding schemes from interaction research can further reduce subjectivity (Rosé et al., 2008). Importantly, AI-driven platforms already demonstrate the capacity to detect emergent behaviors in real time by analyzing digital traces of collaboration (Holstein et al., 2019), suggesting that assessment of emergence can be scaled in technologically supported environments.

An example illustrates how this system works in practice. In an English for Academic Purposes seminar, groups were asked to brainstorm arguments for a research poster using a digital whiteboard. While most groups listed points as instructed, one student reorganized the contributions into a flowchart that linked claims, evidence, and counterarguments, and inserted questions in the comment section to prompt peer clarification. His actions were coded under the rubric as Level 3 initiative, indicating frequent generation of novel strategies that enhanced group learning. Peers responded by adapting their notes within the flowchart and adding new examples in response to his prompts, which were coded as Level 2 responsiveness. The instructor recorded these actions through the platform's version history and complemented them with the student's reflective entry explaining his choice of representation. This triangulation created a reliable record and supported diagnostic feedback. The student was praised for his creativity but also advised to consider making his innovations more accessible to peers, while his teammates were encouraged to strengthen their responsiveness.

This vignette illustrates that assessing emergence is both theoretically grounded and practically applicable. The rubric descriptors provide a structured scale, the coding of initiative and responsiveness ensures systemization, and the preserved artifacts supply reliable records. Most importantly, the outcome is not a summative score but targeted feedback that guides learners toward improved capacity to generate and respond to affordances. In this way, Affordance Emergence exemplifies how abstract dimensions of affordance can be observed in practice, assessed systematically, and leveraged for assessment for learning.

Affordance Reciprocity

Reciprocal affordances foreground the relational nature of learning opportunities, where one learner's initiative generates affordances that others may take up, adapt, or ignore. This focus reflects the interplay between compositionality and normativity as dimensions of affordance. Compositionality is visible when individual contributions are woven into a joint activity system, while normativity is enacted when participants align with social expectations of collaboration and responsiveness. In classrooms, reciprocal affordances often manifest when a learner's question, example, or explanation creates a new possibility for others, whose subsequent actions confirm whether the affordance becomes part of the shared ecology. This aligns with sociocultural perspectives on mediation (Vygotsky, 1978) and ecological views of co-constructed learning (Nguyen & Doan, 2025b).

Assessment under this focus attends simultaneously to the affordance created and the action taken in response. On the creation side, evidence includes inviting quieter peers to participate, offering a clarifying explanation, or proposing an idea that reorients the task. On the uptake side, evidence includes whether peers acknowledge, build on, or extend the opportunity provided. Studies of classroom dialogue show that the value of a learning move often depends on whether others respond and integrate it into their activity (Mercer et al., 2019). Xie and Zhang (2024) likewise demonstrated that tracking initiations and responses is essential for understanding how peer interactions sustain collaborative learning. Thus, reciprocal affordances cannot be assessed by isolated actions; they require attention to how opportunities are offered and acted upon.

Systemization of this focus can be achieved through rubrics with parallel scales. One scale may describe levels of affordance creation, ranging from rarely creating opportunities for peers to consistently generating opportunities that reshape group activity. A second scale may describe levels of action taken, from rarely taking up opportunities afforded by peers to consistently extending them into new directions. Teachers can record these through coded interaction transcripts, while peer feedback can triangulate perceptions of who enabled or expanded opportunities. Digital platforms provide

additional traces such as reply chains or turn-taking patterns, which AI analytics can process to detect patterns of reciprocal engagement at scale (Holstein et al., 2019).

An illustrative vignette demonstrates this dual focus. In a group discussion of a reading text, Student R noticed that Student S had been silent and directly asked for her opinion, linking the prompt to something S mentioned in a prior lesson. This act was coded as Level 3 on the creation scale, showing frequent generation of opportunities for peers. Student S responded by contributing a novel example that broadened the group's analysis, coded as Level 2 on the action-taken scale, indicating meaningful but occasional uptake. The teacher logged the sequence in observation notes, while the transcript preserved evidence of both moves. Feedback was then differentiated: R was commended for enabling peer participation, while S was encouraged to build on such invitations in future tasks. By evaluating both the creation of affordances and the actions taken in response, reciprocal affordances become a transparent and recordable dimension of assessment for learning, moving beyond individual performance to capture the ecology of shared growth.

Affordance Resonance

Affordance resonance refers to the cascading amplification of opportunities in a learning ecology, distinct from the more immediate exchanges observed in reciprocal affordances. Whereas reciprocity emphasizes dyadic or small-scale responsiveness, resonance captures how a single learner's action triggers a chain of follow-up moves reverberating across the group, reorienting activity trajectories and sometimes altering classroom norms. This phenomenon draws together the dimensions of valence, compositionality, and normativity. Valence underscores the motivational and affective salience that makes a contribution compelling to others; compositionality reflects how that contribution is woven into the group's collective activity; and normativity becomes visible when resonant moves challenge or redistribute established power dynamics, for example, when a peripheral student introduces an idea that reshapes participation structures. Resonance, therefore, embodies amplification and the capacity of individual agency to transform group strategies and normative expectations.

Assessment of resonance requires attention to catalytic contributions that generate multi-layered ripple effects. Observable evidence includes cases where an idea inspires multiple peers to adopt new strategies, when a learner's question evolves into a reference point for extended discussion, or when a single move becomes a teaching moment that reconfigures the focus of the whole class. Such evidence distinguishes resonance from reciprocity: the former involves cascading adoption and reorganization at scale, whereas the latter remains bounded within direct exchanges. Empirical studies confirm that catalytic moves are central to collective creativity (Sawyer, 2005) and expansive learning processes where innovations disrupt existing practices (Engeström, 2007). Documenting resonance highlights learners whose contributions amplify learning beyond individual uptake to shape collective development.

Systemizing resonance assessment can be achieved through qualitative descriptors that profile the catalytic impact of contributions. Rubric levels may range from rarely sparking collective uptake to consistently producing ideas that transform group strategies or norms. Documentation requires tracing how a contribution propagates, for example, through teacher logs, portfolios that follow the evolution of ideas, or transcripts identifying recurring references. In technology-enhanced environments, these patterns can be captured more systematically. Interaction logs, version histories, and discussion threads can be analyzed to map how one contribution spreads across peers. AI-driven analytics allow network-based resonance detection by identifying when a single node becomes disproportionately central, signaling a cascade of uptake and adaptation (Holstein et al., 2019). Such systems can automatically generate resonance logs that record the original seed contribution, the breadth and depth

of responses, engagement persistence, and participation patterns shifts. From these logs, composite resonance scores can be derived, not as summative grades but as developmental profiles indicating the extent to which contributions function as catalysts. These profiles support feedback: learners whose ideas consistently inspire others can be encouraged to make their strategies more explicit, while those who participate in amplification can be guided to extend ideas into new domains.

For example, during a seminar on problem-solving, Student J, usually a peripheral participant, proposed reversing the order of steps in the assigned task to test whether the outcome would remain valid. This suggestion immediately drew peers' attention and altered group dynamics. Several classmates experimented with the reversed sequence, one subgroup adopted it as their main approach, and the teacher expanded the moment into a mini-lesson on alternative strategies. In a technology-enhanced classroom, the AI-supported platform automatically captured this cascade. The system first identified J's utterance as a seed event through real-time transcription, tagging it with speaker ID and timestamp. It then traced how the idea propagated by detecting explicit references in subsequent turns, semantic similarity in peers' contributions, and structural shifts in the collaborative workspace. The platform generated a resonance log indicating that six different peers referenced J's contribution, sustained engagement for more than forty minutes, and led to measurable redistribution of turn-taking, with quieter students contributing more actively. Based on these indicators, the AI calculated a composite resonance score and categorized the episode as Level 4, denoting a catalytic move that transformed group strategy and participation norms. The teacher reviewed the log, confirmed the classification, and added contextual notes. Feedback was provided through the platform: J was recognized for introducing a transformative strategy and encouraged to make such contributions more explicit. At the same time, peers received acknowledgment for amplifying the innovation and were guided to extend similar uptake behaviors to other contexts.

A learner-centered rationale follows from assessing resonance. When catalytic contributions and their cascades are made visible through logs and descriptor-based profiles, learners receive specific feedback about what made an idea travel, such as clarity of framing, examples, or timely invitations to peers. Such task-contingent feedback strengthens feedback literacy and self-assessment, which are known levers for improvement (Carless & Boud, 2018; Hattie & Timperley, 2007). Because resonance profiles track initiative and amplification, quieter students can identify productive entry points while frequent contributors learn to scaffold uptake rather than dominate. This way, evidence about propagation is converted into feed-forward goals that target agency and collaborative competence, consistent with formative assessment principles that improve learning when evidence is used to adapt teaching and support self-regulation (Black & Wiliam, 1998; Nicol & Macfarlane-Dick, 2006). The AI-generated traces also give learners a longitudinal view of growth, for example, movement from local uptake to class-wide catalysis across weeks, which helps them monitor the efficiency of participation and diagnose room for development. At the group level, resonance assessment distributes recognition more equitably, since logs credit both catalysts and amplifiers, and it supports redesign of participation norms when the data show that influence is concentrated. In short, assessing resonance benefits learners by turning the dynamics of idea propagation into actionable, auditable feedback that guides next steps rather than simply certifying past performance.

Affordance Negotiation

Affordance negotiation refers to learners' capacity to reshape, challenge, or co-design the affordance landscape of a task rather than simply working within the rules provided. Traditional assessments typically treat the conditions of engagement as fixed: instructions are predetermined, success criteria are rigid, and deviation from the rubric is seen as non-compliance. However, real learning ecologies

are more dynamic. Students often recognize when the given structure does not match their needs or the affordances available, and they exercise meta-agency by discussing and altering the conditions of participation. This focus draws on intentionality, since learners act deliberately to change the rules of engagement; normativity, since negotiations reconfigure the shared expectations and boundaries of practice; and compositionality, since negotiated affordances only hold when multiple actors ratify and enact them collectively. Affordance negotiation, therefore, highlights that assessment must attend to the use of existing opportunities and the learner's ability to generate new conditions for meaningful learning.

Assessment of negotiation targets both the process and the outcome of such interactions. Evidence includes proposing modifications to instructions, questioning the fairness or relevance of criteria, and collectively deciding on alternative pathways that better suit group strengths. Importantly, negotiation is not assessed by whether the teacher agrees but by the quality of the initiative: Did learners identify a mismatch between affordances and objectives? Did they provide a reasoned justification for their proposed changes? Did the negotiated outcome still align with learning goals? Such evidence reveals learners' autonomy, critical awareness, and collaborative problem-solving, which traditional assessments rarely capture (Biesta & Tedder, 2007; Giroux, 2011). Systemization can be achieved through rubrics that describe levels of negotiation, from rarely questioning given rules to consistently engaging in reasoned renegotiation that improves alignment between affordances and learning objectives. Documentation may include teacher journals of negotiation episodes, revised task guidelines, or student reflections explaining the rationale for requested changes.

Technology-based platforms can further support negotiation assessment. In AI-enhanced environments, the system can log when learners propose modifications through digital submissions, discussion forums, or collaborative documents. These proposals can be analyzed for their frequency, justification quality, and uptake by peers or instructors. Resonance-style analytics can be adapted to negotiation, tracing how a single proposal spreads through the group and results in changes to task design. Automated negotiation logs can thus capture both the initial challenge and the subsequent ratification, generating negotiation scores that profile learners' capacity to act as co-designers of their learning ecology. Feedback can then be feed-forward: students may be encouraged to ground their proposals in more unmistakable evidence, or to ensure their suggestions remain inclusive for peers.

In a group project requiring each student to speak in English for precisely two minutes with standardized slides, Group X initially complied but soon realized the rigid format did not fit their strengths. One member was highly skilled in visuals but less confident speaking, while another had extensive content knowledge that exceeded the time limit. Recognizing this mismatch, the group respectfully approached the teacher, explained how the current rules constrained their learning, and proposed a more interactive format: one member would handle visuals, and another would lead a Q&A session. The teacher agreed after discussion, and the new format preserved learning objectives while allowing members to play to their strengths. In an affordance-based assessment, this episode would be coded as Level 3 negotiation: learners identified a limitation, provided justification, and collaboratively reached an alternative aligned with pedagogical goals. The system log recorded the proposed change, peer endorsements, and the teacher's acceptance, producing a transparent record. Feedback recognized the group's agency while suggesting that future negotiations could explicitly consider how changes might affect assessment fairness across groups. Affordance negotiation thus highlights learners' ability to reconfigure the very conditions of learning, linking intentionality, normativity, and compositionality. Assessing this focus validates students' autonomy and makes visible how learners co-design the ecology of participation, ensuring assessment functions as a site of growth rather than constraint.

Affordance Disruption and Reclamation

Affordance disruption and reclamation capture learners' capacity to adapt when expected opportunities for action are lost, compromised, or transformed. Unlike traditional assessments, which presume stable conditions and evaluate performance against predetermined criteria, this focus recognizes that real learning ecologies are unpredictable. Digital platforms fail, plans collapse, misunderstandings occur, and external events intrude (Stockwell, 2007). Affordance disruption refers to such interruptions, while reclamation highlights learners' resilience in restoring or reinventing opportunities. This focus integrates the dimensions of perceptibility, since learners must notice both the disruption and alternative possibilities; intentionality, since they must deliberately act to restore learning; and valence, since reclamation often depends on the motivation to persist rather than disengage. Together, these dimensions make disruption and reclamation a powerful lens on adaptability and agency in dynamic learning environments.

Assessment of disruption and reclamation centers on two interrelated aspects: the learner's immediate response to the disruption and the quality of the alternative affordance they construct. Observable evidence includes whether learners identify a viable workaround, whether the reclamation aligns with task goals, and whether peers or the group benefit from the adaptation. Prior research confirms that such behaviors are central to self-regulated learning (Zimmerman, 2002) and are linked to deeper engagement when feedback is integrated over time (Boud & Molloy, 2013). Assessing these moments moves beyond performance auditing to recognize learners' problem-solving, resilience, and growth potential.

Systemization can be achieved with rubrics that describe levels of adaptability. For example, Level 1 might denote disengagement in the face of disruption, Level 2 a minimal workaround with limited alignment to objectives, Level 3 a constructive reclamation that maintains objectives, and Level 4 a transformative reclamation that improves upon the original task design. Recording can draw on teacher logs, learner narratives, and products demonstrating adaptation (e.g., revised drafts showing how confusion was resolved). In AI-integrated environments, disruption events can be detected automatically, for example, when learners stop interacting with a platform or switch to an alternative channel. The system can then log reclamation behaviors, such as continuing dialogue on a different app, generating disruption–reclamation profiles for each learner. These profiles do not assign summative grades but provide developmental indicators of resilience, which can be used for formative feedback.

During an online exchange with international peers, the video conferencing platform failed, and breakout rooms could not be accessed. Student D quickly messaged Student R through a mobile app and proposed continuing the conversation via voice notes. The AI-supported system captured the disruption when the conferencing tool registered repeated connection failures and logged the reclamation when voice messages between D and R were uploaded to the shared workspace. The log indicated that D initiated the workaround within two minutes of the disruption, that R responded constructively, and that the dialogue continued for the intended duration. The system generated a reclamation score of Level 3, reflecting a constructive adaptation that preserved the original learning objective. The teacher later validated the log and added a note commending D and R for adaptability. Feedback encouraged the students to share their strategy with the class, turning a disruption into a learning opportunity for the group.

This vignette demonstrates that disruption and reclamation can be assessed in a systematic and scalable way. By documenting how learners perceive, act upon, and sustain learning in the face of obstacles, affordance-based assessment highlights resilience as a core learning dimension. Far from being

incidental, disruptions become opportunities to recognize and cultivate adaptive capacities, positioning assessment not only as a measure of achievement but also as a driver of growth in uncertain and dynamic contexts.

Latent Affordances and Trajectories

Latent affordances and trajectories emphasize the temporal ecology of learning. Unlike emergence, which captures immediate innovation, or disruption, which reflects resilience in the face of sudden loss, this focus highlights how opportunities may exist in the environment yet remain dormant until learners reach sufficient readiness or until contextual conditions shift to make them salient. Latent affordances are not yet realized opportunities that learners initially overlook, ignore, or find too demanding. This type of affordance field is clearly demonstrated in an idiographic study by Nguyen and Doan (2025c), in which learners revisited latent affordances and engaged with them strategically after a period of self-regulated learning. These affordance trajectories describe how learning opportunities may be re-encountered and taken up more fully, demonstrating that development is rarely linear. This perspective builds on dynamic systems theory and longitudinal research, which show that learners often demonstrate delayed uptake or a "ripening" of knowledge (de Bot, 2008; Dörnyei, 2019). In this sense, the focus operationalizes the dimensions of perceptibility, since attention to affordances often develops gradually, intentionality, since learners must decide to act upon an affordance when the time is right, and normativity, since the recognition that returning to earlier opportunities is a legitimate part of learning challenges deficit-oriented views of delayed uptake.

Assessment of latent affordances and trajectories requires sensitivity to development across time rather than snapshot judgment. Evidence includes cases in which learners return to tools, strategies, or content that they previously underused and apply them more effectively, when a resource once seen as irrelevant becomes central under new task demands, or when learners' reflective accounts indicate recognition of growth in their ability to exploit earlier opportunities. The goal is not to penalize students for delayed uptake but to recognize progress in how they re-engage with affordances. This perspective broadens the meaning of assessment for learning by positioning developmental timing as part of competence rather than deviation from a norm.

Systemization can be achieved through rubrics that describe developmental stages of uptake, ranging from initial non-use to partial experimentation to full integration into practice. Documentation may draw on portfolios that capture learner products across multiple points, teacher logs that note revisitations, and student reflections that describe strategies once ignored but later mastered. In technology-enhanced environments, latent affordances can also be tracked automatically. For instance, a platform can log feature usage across the semester, detecting when learners activate functions of a tool that they had previously ignored or when they revisit content after long periods of inactivity. Trajectory analytics can then visualize growth, demonstrating how affordances once latent become progressively central. These trajectory profiles provide a longitudinal record that supports feedback. Learners who show delayed but eventual uptake can be commended for persistence and guided to anticipate other affordances that may later become useful, while those who consistently overlook available resources can receive prompts to revisit them under new conditions.

For example, early in the semester, students were introduced to a digital mind-mapping tool for recording and organizing vocabulary. Most learners, including Student L, restricted their use to basic text boxes, listing words without connections, leaving advanced features such as color coding, hierarchical grouping, and cross-linking latent. Later in the term, during a complex research synthesis project, L revisited the tool and began using its advanced functions to cluster words by semantic fields, connect them to example sentences, and highlight collocational patterns across sources. The AI-supported

platform captured this linguistic trajectory by comparing feature usage logs, showing minimal engagement with form–meaning connections at the beginning and more sophisticated integration of lexical networks later on. The system generated a trajectory profile that mapped how latent affordances for organizing lexis became central when task demands required higher-order synthesis. The teacher validated the log and added qualitative comments, noting that L's ability to connect vocabulary across texts had improved lexical range and discourse coherence. Feedback encouraged L to apply the same reflective strategy to other underused tools, such as concordancers or corpora, reinforcing the idea that delayed uptake of linguistic resources is not a weakness but evidence of developmental growth.

Although the six analytic foci foreground ecological processes such as negotiation, resonance, and intentional alignment, each focus can be oriented to reflect linguistic evidence. This orientation anchoring ensures that the framework remains fundamentally a *language assessment* tool rather than a measure of generic cognitive abilities. For example, resonance involves learners' capacity to reformulate linguistic patterns, manipulate grammatical resources, and recontextualize lexical items to align with emergent meanings, processes that presuppose a high degree of linguistic awareness and proficiency. Similarly, negotiation sequences hinge on the learners' pragmatic competence, turn-taking strategies, and ability to deploy clarification requests and reformulations. In this way, the foci function as ecologically grounded lenses for observing language development through its situated linguistic manifestations, bridging process-oriented perspectives with concrete linguistic competence. By foregrounding latent affordances and trajectories in linguistic development, assessment becomes attuned to the temporal dynamics of language learning. This focus ensures that learners are recognized for immediate performance and their capacity to revisit, reclaim, and expand upon earlier linguistic opportunities, making assessment genuinely developmental and ecological in scope.

It is worth noting that the present foci are intentionally conceptual. As Messick (1989) emphasized, constructs are not discovered fully formed but are progressively refined through cycles of theoretical articulation and empirical validation. Kane (2006) similarly argued that without a clearly articulated interpretive framework, there is "nothing to test," because empirical studies require a structured set of interpretive claims to interrogate. Mislevy (2018) likewise notes that frameworks must precede data collection to give structure to interpretation. From an ecological perspective, van Lier (2004) stresses that conceptual categories are indispensable for making sense of the complexity of real-world learning environments. The six analytic foci proposed here should therefore be seen not as final categories but as theoretical proposals, deliberately articulated to invite subsequent empirical work rather than to replace it.

Integrating Ecological Affordance Profiles

At this point, affordance-based assessment reframes language evaluation as an ecological and developmental process. Rather than delivering a final verdict on learners' linguistic ability, it constructs a living operational history of how they mobilize language resources in interaction: generating new expressions, supporting peers through paraphrase or scaffolding, sustaining discourse after breakdowns, negotiating meaning, and revisiting forms or strategies across time. Overlaps between foci are not contradictions but indicators of ecological richness, since a single utterance may simultaneously display lexical creativity, pragmatic reciprocity, and discourse resonance. This approach's ultimate value is providing learners and teachers with an Ecological Affordance Profile (see Table 2), a dynamic record of how language competence emerges, circulates, and develops in context. Such profiles support reflection on communicative practices, enable feed-forward guidance tied to linguistic evidence, and affirm that assessment in language education is not about closing achievement but about sustaining continuous improvement in how learners use, adapt, and grow their linguistic repertoires.

Table 2 *Ecological affordance sample profile*

Focus	Subscores	Evidence Logged	System Score (0–4)	Trend	Teacher Validation	Overlap Observed	Feed-forward Suggestion
Emergence	Initiative 3, Relevance 3	Three novel visual strategies introduced during group tasks; two reused by peers	3	Upward	Confirmed	Linked to reciprocity (peers adopted) and resonance (design influenced broader activity)	In the next task, present emergent visuals with a two-minute explanation of how they connect to task objectives. This structured framing is likely to raise resonance scores because peers can adopt innovations more rapidly.
Reciprocity	Creation 3, Action 2	Four invitations to quieter peers; two integrated into final product	3	Stable	Confirmed	Overlapped with resonance when one invitation sparked whole-class debate	Build a peer-invitation protocol: phrase questions to connect directly with the central prompt and ask follow-up clarifications. This will increase the proportion of invitations that generate uptake in the group output.
Resonance	Catalytic 4	An alternative procedure adopted by six peers and sustained for forty minutes	4	Upward	Confirmed	Emerged from an innovation (Emergence) and spread via uptake (Reciprocity)	Develop a short "rationale template" to accompany procedural innovations. Testing it across two future group tasks can help evaluate whether resonance breadth remains high but becomes faster to establish.
Negotiation	Diagnosis 3, Alignment 3	Two proposals to adjust task rules; one accepted	3	Upward	Confirmed	Intersected with reclamation when negotiation followed platform failure	Keep a negotiation log noting mismatch, proposal, and justification. Sharing this with peers before approaching the teacher will strengthen collective alignment and improve acceptance rates.

(*Continued*)

Focus	Subscores	Evidence Logged	System Score (0–4)	Trend	Teacher Validation	Overlap Observed	Feed-forward Suggestion
Disruption & Reclamation	Timeliness 3, Alignment 3	Switched to voice messages within two minutes when platform failed	3	Stable	Confirmed	Led into negotiation when new format was formalized	Draft a contingency protocol with two alternative tools per task type. Upload it to the shared workspace so that reclamation becomes collective rather than individual.
Latent Trajectories	Reactivation 3, Integration 3	Advanced mind-map features used mid-term after initial neglect	3	Upward	Confirmed	Related to emergence of new strategies developed during re-engagement	Each week, identify one underused feature in an existing tool and document a trial use. This habit will systematize latent affordance activation and ensure progress is not left to chance.

The sample learner profile indicates strong discourse catalytic ability (Resonance = 4), as the learner's introduction of new lexical and discourse markers was consistently taken up and reused by peers. Linguistic innovation is evident in emergent word forms and circumlocutions (Emergence = 3), with measurable uptake showing that these creative uses contributed to shared understanding. Reciprocity is developing, as paraphrases and backchanneling supported peers but were not always tightly aligned with the communicative task. Negotiation of meaning is promising, demonstrated through clarification requests and repair moves, though more structured use of discourse frames is needed to maximize clarity and acceptance. Reclamation is quick, with the learner maintaining communicative continuity across modalities during technical disruptions, but strategies have not yet been extended to group-level coordination. Latent trajectories reveal temporal growth in grammatical competence, as earlier avoided forms such as conditional structures later reappeared with accuracy in more complex tasks. Overlaps are ecological strengths: emergent forms often cascade into resonance when peers adopt them, while breakdowns frequently lead to negotiation sequences. Feed-forward suggestions are explicitly tied to language use, for example, practicing rationale templates with target discourse markers, keeping negotiation logs with clarification stems, and rehearsing contingency protocols for multi-modal communication, so that both teacher and learner have concrete, linguistically focused next steps rather than vague aspirations.

The sample profile table is not intended to function as a definitive scoring system. Rather, it serves as a representational structure designed to orient learners and teachers toward key ecological learning processes captured by the six analytic foci. The terms "Trend," "Teacher Validation," and "Subscores" refer to interpretive indicators that illustrate patterns of learner–environment interaction over time, rather than fixed numerical scores. These indicators aim to provide directional feedback that helps learners and teachers understand developmental trajectories within an ecological perspective. In practical implementations, each element can be further elaborated through context-specific rubrics, exemplars, and moderation procedures to support shared interpretive attunement among teachers. However, developing such operational tools lies beyond the scope of this conceptual paper, which focuses on establishing the theoretical and analytical infrastructure. The current table should

therefore be read as an illustrative, composite example, not as the performance record of a single student or a finalized assessment instrument.

Implications for Assessment

An ecological and affordance-based approach reframes language assessment as the documentation of how learners mobilize and develop linguistic resources in action. Rather than positioning assessment as a final verdict delivered at the end of instruction, this framework generates a continuous record of evidence, creating a profile that integrates micro-level observations, formative use for pedagogical adjustment, and summative reporting for institutional or accreditation purposes.

At the micro-assessment level, every interactional move, such as the invention of new lexical forms, clarification requests, or discourse markers that gain uptake, is captured and coded against the foci. This produces fine-grained evidence of how language competence is enacted in practice. At the formative level, such operational histories are aggregated across weeks, allowing teachers and learners to identify developmental patterns, address weaknesses, and adapt instructional strategies. At the summative level, the Ecological Affordance Profile functions as a comprehensive score report that documents both the distribution of competencies across the six foci and the ecological overlaps between them. This layered design means that by the end of a course, learners already hold an auditable record of their language development.

The framework nonetheless remains compatible with outcome-based approaches. Institutions may still require outcome-based assessments as external audits, retesting, or benchmarking procedures. In such cases, the ecological profile complements standardized results by providing the operational history behind the snapshot. If outcome-based scores appear inconsistent with the profile, teachers and assessors can trace back the recorded episodes to identify what happened and where the discrepancy lies. For example, a learner may demonstrate strong communicative resonance in authentic tasks but underperform in decontextualized test conditions, or conversely, a profile may appear overstated without sufficient linguistic grounding. The trace-back capacity prevents premature judgments and enables a more balanced validity argument by aligning test scores with ecological evidence.

Evidence collection is designed rather than improvised. For each focus, observable indicators are tied to linguistic manifestations and auditable artifacts. Emergence is evidenced by novel lexical or syntactic constructions recorded in version histories. Reciprocity is marked by paraphrasing and uptake turns in transcripts. Resonance is indicated by lexical or discourse features that spread across peers in classroom recordings. Negotiation is evidenced by clarification sequences and repair moves documented in discussion logs. Disruption and reclamation are shown through preserved discourse continuity across modalities during breakdowns. Latent trajectories are captured through portfolios that demonstrate delayed yet successful uptake of previously avoided forms. Sampling rules, such as two assessment episodes per focus per half term, ensure comparability while maintaining ecological authenticity.

Scoring is analytic and layered. A common four-point descriptor scale ranging from not observed to consistent and catalytic is applied across foci, with sub-scores where necessary. Layered coding is permitted so that the same utterance may simultaneously represent emergence, reciprocity, and resonance. Overlap is not treated as redundancy but as ecological richness, documenting how language competence operates across dimensions. Reliability is maintained through calibration sets, double rating of a rotating sample, moderation meetings, and an auditable trail linking each score to timestamped evidence. AI-supported tagging can enhance scalability but always requires teacher validation.

Fairness and accessibility are reconceptualized as equitable access to affordances. Perceptibility is ensured through piloting and learner feedback, while normative permissions are made explicit so that negotiation and questioning are legitimate assessment moves. Alternative channels, such as written chat when audio fails, guarantee that learners retain opportunities for reclamation. Periodic bias checks prevent resonance or uptake from being concentrated in only a few learners without pedagogical justification.

Reporting is ecological and developmental. Instead of a single composite score, the Ecological Affordance Profile presents descriptor scores with evidence citations for each focus, overlap tags that show interconnections, and feed-forward suggestions that prescribe concrete linguistic actions for growth. Summative decision rules can be set transparently, for example, requiring evidence across at least four foci, including one from emergence or resonance and one from negotiation or reclamation. When standardized test results are inconsistent with profile data, the operational history allows assessors to trace discrepancies back to specific episodes and contexts. This dual-layered system ensures that outcome-based testing, if used, does not override ecological evidence but is instead situated within a broader developmental record.

In sum, affordance-based assessment extends beyond outcome measurement by providing a multilayered, auditable, and growth-oriented account of language learning. It does not reject traditional testing but reframes its role: outcome-based tests offer snapshots, while ecological profiles document the living history of linguistic competence. Together, they create a comprehensive system in which every assessment outcome, whether aligned or contradictory, can be interpreted through a traceable record that supports both validity and accountability in language education.

Conclusion

This paper has outlined an affordance-based framework for language assessment that reconceptualizes evaluation as an ecological and developmental process. Instead of delivering a final verdict on learner ability, the framework documents how learners generate, share, negotiate, reclaim, and revisit affordances in interaction. The six proposed foci make visible the ways in which language competence unfolds in practice, extending beyond static achievement to capture creativity, reciprocity, resonance, adaptability, and delayed uptake.

The main contribution of this approach lies in aligning ecological validity with assessment for learning. Micro-level observations capture interactional details, formative profiles aggregate them into developmental trajectories, and summative accounts take the form of Ecological Affordance Profiles. These profiles provide an auditable record that can complement outcome-based testing, offering a means to trace back discrepancies between standardized results and classroom evidence. In this way, assessment is reframed from a terminal measure of attainment to a sustained process of documenting and supporting growth.

This framework does not simply extend existing assessment practices; it shifts the epistemological ground on which those practices stand. Under an ecological ontology, validity is not secured through the statistical stability of decontextualized judgments but through the coherence of theoretically informed interpretations across extended, situated evidence (Kane, 2006; Mislevy, 2018). Inter-rater reliability, in this view, is not a proxy for objectivity but a practice of shared perceptual attunement and interpretive alignment, more akin to the calibration of scientific observation than to the enforcement of rubric uniformity. By rendering ecological processes analytically visible through the six foci, the framework provides the conceptual infrastructure for such a validity regime. It offers not a boutique alternative to mainstream testing, but a theoretically necessary evolution: as our understanding of language learning

has moved beyond static traits toward complex, adaptive, and neuroecological systems, so too must our assessment practices follow.

Further research is required to consolidate and extend this framework. Empirical studies should examine how reliably the six foci can be identified across tasks and populations, and how affordance-based profiles compare with outcome-based scores. Broader application across schooling levels, vocational training, and multilingual contexts will test its adaptability. Implementation studies will also need to address teacher workload, moderation, and technological support. A promising direction is the development of digital tracking systems, potentially supported by artificial intelligence, that can log learner interactions, generate longitudinal profiles, and provide feed-forward suggestions in real time. Such systems could enhance scalability while preserving teacher oversight and ecological fidelity.

By integrating theory with practice, affordance-based assessment aims to expand the scope of what is considered assessable in language learning. It shifts the central question from whether learners have reached fixed outcomes to how they engage with and expand opportunities for language use across time, offering a growth-oriented perspective that may complement existing standards while opening new possibilities for the future of language assessment.

Generative-AI and AI Assistant Statement

This paper complies with current academic policies on the use of generative artificial intelligence (AI) tools. In this article, generative AI (ChatGPT and Gemini) and Grammarly were employed solely as an assistant for proofreading and language editing. The authors take full responsibility for the accuracy, originality, and integrity of the work. Where AI-assisted phrasing was suggested, all content was independently checked and revised to ensure academic standards and ethical integrity.

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