Honoring Human Variation at Scale: Reimagining School through Facilitated Interdependent Learning

Thomas E. Welch

National Council of State Supervisors For Languages (NCSSFL), United States

Abstract

Facilitated Interdependent Language Learning (FILL) is a proficiency-centered approach to world language education that replaces pacing guides and teacher-directed curricula with a flexible system organized around what learners can do with language. In a FILL classroom, instructional authority shifts decisively toward the learner: students choose the language and topics they wish to study, set proficiency-based goals, select resources, and reflect on their progress, while the certified teacher operates as a facilitator who designs the conditions for language acquisition rather than directing daily learning. Graduation credit is earned through demonstrated proficiency rather than seat time, positioning learners as accountable agents in their own growth. Students function as autonomous yet interdependent learners, articulating proficiency targets through NCSSFL/ACTFL Can-Do Statements [1] aligned with ACTFL proficiency frameworks [2]. Proficiency serves as both the organizing principle for learning and the primary metric for assessment, prioritizing communicative ability over content coverage. Artificial intelligence plays a central, transformative role by enabling personalization at scale: learners use AI to generate level-appropriate texts, design individualized practice, explore linguistic structures, and engage in written and spoken interaction aligned to their goals and interests. Positioned not as a shortcut but as an adaptive learning partner, AI supports exploration, strategy development, and iterative refinement. Rigor and transparency are ensured through externally benchmarked proficiency assessments (e.g., Avant's STAMP test), providing independent validation of growth and allowing proficiency to carry institutional meaning beyond the classroom. This session presents FILL as a transferable framework with implications extending beyond world language education, demonstrating how learner-centered, AI-supported, proficiency-based systems can expand access to less commonly taught and heritage languages without adding staffing or programs. For underresourced schools in particular, FILL offers a sustainable model for broadening opportunity, preserving rigor, and redistributing power toward learners while maintaining accountability at scale.

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Introduction

1. The Persistence of Structure

"So… what are we learning this week?"
The familiarity of the question lies not in its content, but in the assumptions it carries. It presumes that learning has already been determined, sequenced, and owned by the system. When the response shifts to "What do you want to be able to do?", the underlying architecture begins to change. The focus moves from content delivery to capability, from curricular coverage to learner intention.
This shift is occurring against a backdrop of profound transformation. Learners now inhabit environments saturated with access to information, tools, and global networks. Artificial intelligence has accelerated this transformation, offering learners the ability to generate explanations, engage in simulated interaction, and receive immediate feedback. Knowledge is no longer bounded by institutional walls; it is distributed across platforms, communities, and contexts.
Yet despite these changes, the structural features of schooling remain largely intact. Courses continue to define what is to be learned, calendars determine when, and grades serve as proxies for success. These structures persist not because they reflect how learning occurs, but because they provide administrative coherence.

The central question, then, is not whether learning has changed. It has. The question is whether the systems designed to support learning have evolved accordingly. This paper argues that they have not, and that meaningful progress requires a shift from refining instruction within existing structures to reimagining the structures themselves. Facilitated Interdependent Language Learning (FILL) is presented as one such reimagining.

2. The Structural Mismatch between Learning and Schooling

Educational reform has historically focused on improving instructional practice. Curriculum alignment, pedagogical refinement, and assessment design have all been the subject of sustained attention. While these efforts have produced important gains, they have not resolved a fundamental mismatch between how learning occurs and how schooling is organized.

Research in second language acquisition has consistently demonstrated that learning is nonlinear, emergent, and highly individual Ellis [3] and Larsen-Freeman & Cameron [4] Learners progress at different rates, respond differently to similar input, and develop proficiency through complex interactions between exposure, use, and feedback. Cognitive science similarly emphasizes the role of prior knowledge, attention, and meaningful engagement in determining whether learning persists [5]

Despite this, schooling remains organized around uniform progression. Courses are sequenced, time is fixed, and learners are expected to move together. This design reflects historical priorities of efficiency and scalability rather than alignment with learning processes.

Time, in particular, functions as the dominant metric. Completion of a course becomes evidence of learning, even though time is only indirectly related to proficiency. As a result, systems often measure what is easy to quantify rather than what is most meaningful. This leads to what might be described as an epistemic substitution: time stands in for learning, and completion stands in for capability.

The consequence is a persistent tension. Educators recognize variability in theory, yet systems constrain it in practice. Learners adapt to structures that do not fully reflect their developmental trajectories, and assessment systems often capture compliance more effectively than growth.

3. Learning in a Networked World: Connectivism as Context

The rise of digital technologies has fundamentally altered the ecology of learning. Knowledge is no longer centralized; it is distributed across networks. Siemens [6] and Downes [7] have described this shift through the framework of connectivism, which positions learning as the process of forming and navigating connections within a network of information sources.

In such environments, the ability to locate, evaluate, and integrate information becomes as important as the acquisition of content itself. Learning is less about internalizing static bodies of knowledge and more about participating in dynamic systems of meaning-making.

However, while connectivism provides a useful descriptive framework, it does not by itself restructure schooling. Many educational systems continue to operate as though knowledge must be delivered sequentially and controlled through curriculum.

FILL can be understood as a structural response to this tension. Rather than treating networked learning as external to schooling, it incorporates it into the design. Learners engage with a wide range of resources—digital platforms, authentic texts, community interactions, and AI-supported tools—forming a network through which learning occurs. The role of the teacher shifts from delivering content to facilitating navigation within this network.

4. The Human Element: Meaning, Memory and Motivation

In a learning environment increasingly defined by access to information, the central challenge is no longer exposure but connection. The question is not whether learners can encounter content, but whether that content becomes meaningful enough to be retained, applied, and extended. This distinction lies at the heart of cognitive theories of learning, which consistently demonstrate that knowledge is not simply received but constructed through interaction with prior experience, purpose, and context [8].

Traditional instructional models often assume that relevance can be designed externally. Curriculum is sequenced, topics are selected, and examples are provided with the expectation that learners will find

meaning within them. While such approaches can produce short-term performance, they frequently fail to generate durable learning. Information that is processed without personal significance tends to remain inert, accessible for assessment but not for application. In this sense, much of what is learned in traditional environments is, at best, temporarily held—sufficient for completion, but not integrated into the learner's cognitive framework.

Facilitated Interdependent Language Learning challenges this assumption by repositioning the learner at the center of meaning-making. Drawing on the conceptual framing articulated in *Putting Ourselves Back in the Equation* [9], FILL environments position the learner as the source of context rather than the recipient of it. FILL environments begin not with predetermined content, but with the learner's interests, goals, and identity. Context is not imposed; it is generated. This shift has profound implications for both motivation and memory.

Consider the learner who chooses to study Korean because of an interest in K-pop. In a traditional course, exposure to Korean language and culture might include a limited set of teacher-selected themes, only loosely connected to the learner's motivation. In a FILL environment, however, the learner's interest becomes the organizing context. Vocabulary, listening tasks, reading selections, and communicative goals emerge from engagement with K-pop itself—lyrics, interviews, fan communities, and media content. The language is no longer abstract; it is embedded in a domain that already holds meaning for the learner.

Similar patterns emerge across other learners. A student interested in Minecraft seeks to communicate with players in Japan, shaping goals around interaction within that community. Another learner pursues French in order to engage more fully with Canadian hockey culture, selecting resources and communicative tasks aligned with that interest. In each case, the learner is not simply engaging with content; the learner is constructing a pathway in which language serves a purpose that is already valued.

Cognitive theory provides a clear explanation for why such approaches are effective. Learning that connects to existing schemas—structures of prior knowledge and experience—is more readily encoded and retrieved [10]. When new information is integrated into a meaningful framework, it is more likely to be retained and transferred. Conversely, information presented in isolation, without connection to prior knowledge or purpose, is less likely to persist.

Motivation research reinforces this dynamic. Deci's Self-Determination Theory [11] identifies autonomy, competence, and relatedness as key drivers of intrinsic motivation. Pink [12] extends this framework by emphasizing autonomy in time, task, team, and technique. FILL environments operationalize these principles in concrete ways. Learners determine what they study, how they approach it, the pace at which they progress, and the communities with which they engage. This alignment between design and motivation is not incidental; it is foundational.

Importantly, this does not imply that all learning must originate solely from existing interests. Rather, it suggests that meaningful engagement emerges when learners are positioned as active participants in shaping context. The role of the teacher is critical in this process. Through careful facilitation, learners are guided to expand their interests, connect them to broader domains, and develop goals that extend beyond initial motivations. What begins as an interest in music, gaming, or sport can evolve into deeper linguistic, cultural, and intellectual engagement.

The implications for memory are equally significant. Bjork's research on "desirable difficulties" suggests that learning is strengthened when learners engage in effortful processing within meaningful contexts [13]. When learners are invested in the outcome, they are more willing to persist through challenge, revise their understanding, and integrate feedback. In contrast, when tasks are externally imposed and lack personal relevance, learners are more likely to disengage or adopt surface-level strategies aimed at completion rather than understanding.

In this sense, the distinction between temporary and durable learning becomes central. Temporary learning is often sufficient to meet external expectations but does not endure. Durable learning, by contrast, becomes part of the learner's repertoire—available for use, extension, and transfer. FILL environments are designed to support the latter by ensuring that context, purpose, and motivation are not peripheral considerations but central elements of the learning process.

As learning environments continue to evolve in response to technological and societal change, the importance of meaning will only increase. Access to information can be expanded indefinitely, but without relevance, such access has limited value. By placing the learner at the center of context creation, FILL offers

a model in which meaning, memory, and motivation are aligned, increasing the likelihood that learning will not only occur, but persist.

5. Facilitated Interdependent Language Learning as Structural Innovation

Facilitated Interdependent Language Learning represents a departure from course-based organization toward a proficiency-based model that aligns more closely with how learning actually develops. In FILL environments, learners pursue proficiency in languages of their choice, guided by clearly defined descriptors such as the NCSSFL-ACTFL Can-Do Statements [1]. These descriptors provide a transparent framework for goal-setting, progress monitoring, and the accumulation of evidence over time.

The role of the teacher shifts accordingly. Rather than delivering a uniform curriculum, the teacher functions as a facilitator, drawing on expertise in language acquisition, feedback, and assessment to support learners whose pathways diverge in language, pace, and focus. Curriculum becomes one resource among many. Time becomes flexible rather than fixed. Progress is measured through demonstrated ability rather than completion of prescribed units.

What distinguishes FILL from many conceptual models of personalized learning is that it has been implemented in operational settings with measurable outcomes. In work documented by Welch and Allen in *The Language Educator*, FILL classrooms have demonstrated that learners working across multiple languages within a single facilitated environment can achieve externally validated proficiency outcomes that equal or exceed those typically associated with traditional course sequences. In one such setting, learners participating in FILL achieved proficiency gains verified through the STAMP (Standards-based Measurement of Proficiency) assessment, with some students earning the equivalent of multiple years of language credit within a single academic year through demonstrated proficiency rather than seat time [14].

This distinction is critical. Because STAMP is an external, standardized assessment aligned to ACTFL proficiency levels, it provides independent validation of what learners can actually do with the language. These results suggest that when learners are given agency, supported through interdependent structures, and guided by clear proficiency targets, they are capable of achieving significant growth without reliance on traditional course sequences.

The implications extend beyond language learning. What FILL makes visible is not simply an alternative instructional approach, but a different organizing logic—one in which learning trajectories are defined by evidence of capability rather than by time spent in a system. In this sense, FILL functions not as an innovation within the existing structure, but as a prototype of a structurally different system.

6. Interdependence and the Social Dimension of Learning

A persistent misconception surrounding personalized learning is that it leads to isolation—learners working independently, often mediated primarily through technology, progressing through predetermined pathways at their own pace. This model, while efficient in certain contexts, risks reducing learning to an individual transaction between learner and content. Facilitated Interdependent Language Learning stands in direct contrast to this interpretation.

FILL is not independent learning in which students sit in front of a computer working through a prescribed sequence. It is a dynamic, socially mediated process in which learner agency is situated within a network of relationships that includes the teacher, peers, and a broader ecosystem of resources. The distinction is critical. Independence suggests separation; interdependence reflects connection.

At the center of this structure is the teacher, whose role is not diminished but fundamentally redefined. Rather than delivering content, the teacher operates as a facilitator grounded in expertise in second language acquisition theory and proficiency development. Research in SLA underscores that language development is a complex, nonlinear process shaped by meaningful input, interaction, and feedback [3]. Within a FILL environment, the teacher draws on this expertise to guide learners in setting goals at an appropriate level of proficiency, ensuring that targets are both challenging and attainable.

This guidance extends beyond goal-setting. Learners are supported in identifying and evaluating resources aligned with their objectives, whether those resources take the form of authentic texts, digital tools, community interactions, or AI-supported environments. The teacher also plays a critical role in helping learners select and refine artifacts that genuinely reflect their progress. In this sense, assessment becomes a collaborative process, grounded in shared understanding of proficiency rather than unilateral judgment.

The student-teacher relationship is therefore transformed. Authority does not disappear, but it shifts from control over content to expertise in process. The teacher becomes a partner in learning, one who observes, questions, guides, and challenges, ensuring that learners remain aligned with meaningful progress rather than superficial completion.

Equally significant is the role of peers in shaping the learning environment. The social dimension of FILL is not incidental; it is integral to its design. Learners regularly engage in discussions about their progress, sharing strategies, suggesting resources, and reflecting on challenges. These interactions create a community of practice in which learning is distributed across participants rather than centralized in the teacher.

Specific classroom practices further reinforce this interdependence. In one implementation, learners are asked to engage weekly with a current event drawn from a primary source in their chosen language. This task serves multiple purposes. It provides authentic input, connects language learning to real-world contexts, and introduces cultural perspectives. When learners come together to discuss these events—often in a shared language such as English—they are able to examine how the same event is represented differently across linguistic and cultural contexts. This not only deepens language awareness but also fosters intercultural understanding, aligning with broader educational goals.

Shared thematic work can also anchor the learning community. For example, a class might engage with a common focus such as one of the United Nations Sustainable Development Goals. Within this shared frame, learners adapt their individual Can-Do goals to align with the broader theme, working in their respective languages while contributing to a collective inquiry. This creates a layered learning experience: individualized in execution, but communal in purpose.

What emerges from these structures is a form of social learning that is no longer mediated solely through the teacher. Instead, it becomes dynamic, distributed, and responsive. Learners interact with one another directly, drawing on diverse experiences and perspectives. The teacher remains central, but not as the sole conduit of knowledge. Rather, the teacher supports the conditions under which meaningful interaction and learning can occur.

This reconfiguration reflects broader insights from sociocultural theories of learning, which emphasize the role of interaction, collaboration, and shared activity in cognitive development. Learning, in this view, is not an individual accumulation of knowledge but a process of participation in socially mediated practices.

In a networked world, where knowledge is distributed and constantly evolving, such a model becomes not only desirable but necessary. Interdependence is not simply a pedagogical choice; it is a reflection of the conditions under which learning now takes place. FILL makes this visible by embedding interdependence into the structure of learning itself, demonstrating that personalization and community are not opposing forces, but mutually reinforcing dimensions of a coherent system.

7. Assessment as Evidence: Reframing Error, Growth, and Proficiency

Perhaps the most consequential shift in a FILL approach lies in how assessment is understood. In traditional systems, assessment frequently functions as a mechanism of judgment. Grades summarize performance, averages determine outcomes, and errors are treated as deficits to be minimized. While these practices provide a sense of order, they often obscure the developmental nature of learning and limit opportunities for growth.

A substantial body of research challenges the assumption that errors are simply indicators of failure. In second language acquisition, errors are widely understood as evidence of developmental progress, reflecting the learner's evolving internal system of language [3]. Similarly, Selinker's research on interlanguage development suggests that learners must pass through stages characterized by approximation and restructuring, during which errors are not only inevitable but necessary [15].

Cognitive science reinforces this perspective. Productive struggle—engaging with challenges that are within reach but not yet mastered—has been shown by Bjork and Bjork to strengthen learning and retention [16]. When learners are allowed to attempt, fail, receive feedback, and try again, they engage in processes that deepen understanding and support long-term memory formation. Conversely, environments that penalize error too quickly can lead learners to avoid risk, reducing opportunities for meaningful learning.

Within this context, FILL reframes assessment as the accumulation of evidence rather than the assignment of judgment. Learners collect artifacts that demonstrate what they can do across interpretive, interpersonal, and presentational modes of communication, guided by proficiency descriptors. Tools such as LinguaFolio

support this process by enabling learners to set goals, reflect on their progress, and curate evidence over time [17].

External assessments, including STAMP, play a critical role by providing independent validation of proficiency. Because these assessments are not tied to a specific curriculum or pacing structure, they allow learning that emerges through diverse and individualized pathways to be recognized with credibility. This is particularly important in FILL environments, where learners are not following a uniform sequence of instruction.

An asset-based perspective underlies this approach [18]. Rather than focusing on what learners cannot yet do, assessment emphasizes what they can demonstrate and how they are progressing. Errors are reframed as data—signals that inform next steps rather than endpoints that define capability.

This shift has significant implications for learner behavior. When assessment is experienced as judgment, learners often aim to avoid mistakes and complete tasks efficiently. When it is experienced as evidence, learners become more willing to take risks, revise their work, and engage in sustained effort. The focus moves from performance to growth, from correctness to capability.

In this sense, assessment becomes not a separate phase of learning, but an integral part of it. It documents progress, informs decisions, and supports the development of proficiency in ways that more closely align with the realities of learning.

8. Artificial Intelligence as Structural Catalyst

Artificial intelligence has introduced new capabilities that challenge existing educational structures. Learners can access explanations, generate practice, and receive feedback without relying exclusively on formal instruction. These developments highlight the limitations of systems centered on content delivery.

In many contexts, responses have focused on restricting or regulating AI use. An alternative approach is to redesign learning environments so that such tools become integral to the process. In FILL environments, AI functions as one of many resources available to learners, supporting engagement rather than replacing it.

This perspective shifts the focus from tool management to system design. The question is not how to control AI, but how to create structures in which its use supports meaningful learning.

9. Emerging Developments in Higher Education

While FILL has developed primarily in secondary education, related approaches are emerging in higher education. Institutions such as the University of Washington and the University of Nebraska have contributed to the development of tools supporting learner-centered, proficiency-based approaches. Research in self-regulated learning at institutions including Michigan State University further supports the importance of goal-setting, reflection, and autonomy.

These developments remain emergent, but they indicate a growing recognition that traditional course-based structures may not fully align with contemporary learning needs. They suggest the possibility of broader systemic change.

Conclusion: Scaling Learning in a Human System

Efforts to honor human variation have often focused on adapting instruction within existing systems. Historically, scale has been achieved mechanically. Standardized curricula, synchronized pacing, and uniform assessments allow systems to manage large numbers of learners by minimizing variation. This approach produces efficiency, but it does so by constraining the very differences that characterize how individuals learn. A FILL approach suggests a different conception of scale—one that is not imposed through uniformity but emerges through the system's capacity to support variation. In such an environment, learners are not required to follow identical paths in order for the system to function. Instead, diverse trajectories are expected, supported, and connected through shared structures of proficiency, facilitation, and evidence. Scale, in this sense, is not achieved by reducing difference, but by designing for it. What appears complex at the level of the individual becomes coherent at the level of the system, not because it has been standardized, but because it has been intentionally structured to accommodate the full range of human learning.

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