

An Instructional Model for English Language Learners
to Reduce Cognitive, Culture, Learning, and Language Load

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In this rapidly changing informational environment, where technological capabilities and social opportunities far exceed the human capacity to fully engage, pedagogy is attempting to keep up with the changes in an increasingly diverse classroom environment where learner experience, skills, and modes of learning are increasingly disparate. While these conditions present a serious challenge for educators and traditionally underserved populations, ELL (English Language Learners) students are hardest hit. According to Meyer (2001), rather than simply dealing with issues of cognitive load; culture load, language load and learning load also present instructional considerations for the English language learner that must be addressed if learning is to “be meaningful” (p. 229). A comprehensive instructional model is needed that creates a simple replicable environment that will allow ELL students to participate in the process of rapidly generating and acquiring underlying schema which can be cataloged in an organized culturally relevant informational reservoir, thereby reducing cognitive load and accelerating their learning process. In this paper, I will give a brief overview of the contribution of relevant learning theories and methodologies to the current ELL environment and how each contributes (if at all) to cognitive load; b) propose an instructional model that addresses the specific issues English learners face; c) and give an example of the model in use.

Literature Review

Learning Theories, ELL and Cognitive Load

Behaviorism. B.F. Skinner’s behaviorist concepts and methods of instruction have been used successfully for particular types of passive human learning where the focus is on performance of a task manifesting in simple responses to stimuli (Ertmer and Newby, 1993).

This theory ignores meaning, understanding, and underlying cognitive processes. Rather, tasks are presented, rewards are implemented, and behavior is repeated until consistent performance is achieved. Skinner, in his book *Verbal Behavior*, contended that language could be approached in the same way that behaviorism dealt with other complex processes such as dancing—by using the concept of chaining simple behaviors together (Driscoll, M.P., 2005, p. 64). Today, ELL students are often taught vocabulary utilizing behaviorist methods of affirmation rewards for rote memorization when the students successfully pair a word with its definition. While this may not unduly increase cognitive load in the early grades, the inadequacies of the method creates results that will later be seen to contribute significantly to cognitive, language and learning load as learning tasks increase in complexity.

Cognitivism. Unlike the behaviorists, the cognitivists did recognize the role of the learner as an active agent in the learning process. The cognitivist also acknowledges the existence and role of the mind (cognition) as it interacts with sensory information resulting from the learner's participation in the environment. Atkinson and Shiffrin (1986) introduced memory into the equation, proposing the flow of information from sensory input to sensory memory to working/short-term and finally long-term memory (as cited in Driscoll, 2005, pp. 74-75). Key to successful instructional design for the cognitivist is the role and importance of automaticity of information, tasks and processes. This concept of automaticity is closely tied to cognitive load—“gradually, they (tasks) become more automated, freeing cognitive resources for other activities” (Sweller 1994). In their 1974 study, LaBerge and Samuels concluded that: “decoding words should be so automatic...readers.. can concentrate their attention on comprehending the meaning ...” (as cited in Driscoll, 2005, p. 81). For the English learner, learning in a CIP environment looks much the same as in a behaviorist classroom—days filled with extensive practice sessions

with corrective feedback (Ertmer and Newby, 1993, p. 58). The implications of this are many. Of chief importance is the difficulty in achieving useful automaticity when the contextual and cultural factors necessary to the assignment of meaning to words and concepts is absent from the learning task. Students may have no known context in which to place the word and may therefore be unable to retrieve and or use it when called to do so.

Constructivism. The objectivist view was losing ground and the passive role of the individual was changing. In 1991, Jonassen clarified the nature of the shift to the individual creating meaning from his/her experiences (p. 10). Constructivists cite instructional goals of higher level reasoning, critical thinking, and cognitive flexibility (Driscoll, 2005, p. 402) and instructional methodologies that include complex, real-world environments requiring that learners develop problem solving skills assisted by extensive scaffolding. Because the learner is steering his/her learning, the instructional goals are negotiated rather than imposed as instructor/teacher objectives (Jonassen, 1991); but, from an ELL perspective this raises concerns about the level of cognitive load. “Despite the alleged advantages of unguided environments... cognitive load theory suggests that the free exploration of a highly complex environment may generate a heavy working memory load that is detrimental to learning” (Kirscher, Sweller and Clark, 2006). There must be a better solution.

Discussion

A New Instructional Model for ELL

In an effort to address the issues of cognitive, culture, language and learning load experienced by English learners, and after a review of some of the existing instructional models, I have constructed a preliminary model based on several assumptions which follow.

Role of Technology: In most classrooms and teaching methodologies, the role of teacher is shifting and technology is no longer optional. Krashen (1981) reminds us that “for more than a decade English learners have been told that their role in the second language acquisition process is a largely passive one...” (p. 228); and, the new instructional theories appear to give the student a more active role. But, in truth there is little left to chance. Students may choose to watch a video, push a key or type in a word. But, in most environments, the rest of the process is simply responding to programming—the computer has replaced the teacher.

The Role of Dialogue. Meyer (2001) in her article on the *Barriers to Meaningful Instruction* pointed out what Vygotsky believed to be of critical importance to a child’s language development: “Through dialogue with adults, children learn to transfer their experiences from the plane of physical action to that of words, creating ‘verbal thought’” (p. 228). In most constructivist classrooms and teaching methodologies, Vygotsky’s dialogue is sadly absent.

Paulo Freire also spoke of the importance of dialogue in his book *Pedagogy of the Oppressed* (2005): “Dialogue does not represent a somewhat false path....On the contrary, dialogue characterizes an epistemological relationship. Thus, in this sense, dialogue is a way of knowing...I engage in dialogue because I recognize the social...character of the process of knowing. In this sense, dialogue presents itself as an indispensable component of the process of both learning and knowing” (p. 17). Little time is available in the classroom for dialogue. Yet it is the way we teach our children—the activity we choose when we interact with friends. A holistic instructional theory should include planned, intentional dialogue supporting and/or scaffolding the process; while also imparting meaning and guidance through shared discussion throughout the learning process.

Role of the Learner: While I welcome the concept of the learner having an active role, I am deeply concerned about the impact on the English learners unless they are more deeply involved in the design process. No one knows better than an English learner what types of problems are most difficult to understand and master. It is imperative that learners take an active role in the design of the individual objects in the model.

Role of the Design Facilitator: There is no one better than an English learner who has successfully bridged the gap to provide expertise and direction to the design process; thus, providing the cultural context that is critical to the model being relevant, meaningful, and effective.

Role of the Designer: Gagné's model of instruction set about to garner the learner's attention, create a connection with prior knowledge, and then proceeded to enact a behaviorist methodology paired with instructional guidance and feedback, expecting retention and transfer. While Gagné does account for the existence of the whole person; like Bloom, he appears to address the part(s) separately. The role of the designer is to create an integrated model that addresses the English learners' unique needs with cultural and contextual schema to reduce cognitive, cultural and learning load, with a holistic mindset.

The Model. The model I propose is holistic and based upon the teacher/instructor, cultural expert, and English learner working together to create learning objects that begin with minimal structure. These can then be built into complex systems of thought and knowledge. While we use a form of this in programming (objects, attributes, methods), this instructional model reverses the process and makes a programming concept concrete. A library of basic objects would be provided, and the user could discover the characteristics and how to use them appropriately; changing attributes as scenarios change and become more complex. Each learner

defined object would be first be conceptualized with real world tools and involve a dialogue with the instructor and fellow classmates about the attributes, constraints, and methodologies of the object being developed *prior to* committing it to an electronic interface. Students would actively participate, giving cognitive processes physical context. Below is an example of the process applied to a problem one of my students discussed with me this week. We dialogued to clarify, added context, and related the problem to her gaming culture.

<p><i>CD: Creative Dialogue (Planning/Parsing/Questioning)</i></p> <p><i>CR: Create Relevance (Add Context/Culture)</i></p> <p><i>CA: Combine and Apply (Ask—These Together?)</i></p> <p><i>CP: Contrast and Personalize (Opposite Viewpoint?)</i></p> <p><i>CE: Conclude and Evaluate (Choose/Test)</i></p>	<p>Problem: Given current market trends, what can you do to capitalize and increase profits in your cyber café?</p> <pre> graph TD CE[Conclude and Evaluate] --> P[Personalize] P --> C[Contrast] C --> CG[Combine] C --> AP[Apply] CG --> CR[Create Relevance] AP --> CR </pre> <p>Dialogue: What does this mean? What are market trends? How does someone capitalize on them? What are profits? What would a cyber café offer that it is not already offering?</p>
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Table 1 Schematic of Krause Theory of Instruction

Conclusion

English learners daily face many challenges. They live their lives as two people—one who is Hispanic and speaks and thinks in Spanish at home with family and friends; and, the other, who is American and expected to speak, act and think like it when at school. Our current instructional design fails to address English learners’ unique needs, produces unnecessary cognitive load, and fails to provide cultural context and adequate (schema) support for English learners to be successful. A new model is needed if we hope to see every student given the chance to be successful.

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