

A Framework of Foreign Language Acquisition:
Cognitive Development and Depth of Processing

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A FRAMEWORK OF FOREIGN LANGUAGE ACQUISITION

Introduction

The following is a critical discussion comparing two educational theories and reflecting on how these theories manifest themselves in my own experience as both learner and educator. The selected theories, Piaget's (1936) Cognitive Development Theory (CDT) and Craik & Tulving's (1975) Levels of Processing Theory (LOP), are foundational in psychology and education and boast a wide and deep scholarly research landscape. For the purpose of a concise and focused discussion, I have narrowed the scope of this paper, using the lens of adult education and foreign language acquisition, to my experience as an English as a Foreign Language (EFL) teacher. The paper is organized in sections as follows:

1. Brief definition and comparison of the theories
2. Discussion of implications for foreign language instruction
3. Contextualizing the theories with practical "case studies" from personal experience
4. Concluding remarks on implications for future practice

In my practice as an EFL teacher I have observed that learners vary widely based on age and proficiency levels and that most of the foreign language instruction is largely wasted effort, rarely resulting in permanent and deep fluency. A renewed method of foreign language instruction is clearly needed, and both these theories show promise towards that end.

Theoretical Literature Review

Piaget's (1936) Cognitive Development Theory (CDT)

Piaget made the case that human development is a biological process of continuing embryogenesis, later conceptualized through four stages (Piaget, 1964):

<u>Stage</u>	<u>Mechanism</u>	<u>Outcome</u>
Sensorimotor pre-verbal	Sensory perception and physical action	Object permanence
Pre-operational	Pretend play and beginnings of language	Symbolic representation
Concrete operations	Beginnings of reason and logic	Conservation of matter
Formal operations	Abstraction of ideas	Moral reasoning

This is by no means a comprehensive account of Piaget's work, merely a working simplification for the purpose of this paper. Piaget (1964) also made a distinction between learning (externally provoked by a teacher and specific to the didactic point) and knowledge creation (spontaneous biological consequence of developmental stages) and inferred that a person's learning is dependent on their developmental stage. Lastly, "operation" is defined as referring to mental operations that act upon a subject to transform, classify, or utilize (Piaget, 1936, 1964).

Craik & Tulving's (1975) Levels of Processing Theory (LOP)

Craik and Lockhart (1972) proposed that memory is a function of stimuli processing depth and as a learner moves through the stages from shallow to deep, they attain increased retention at the expense of speed of processing. Craik and Tulving (1975) formulated three broad levels of processing to test the theory:

1. Visual, concerned with the structural qualities of an object
2. Phonemic, based on auditory perception
3. Semantic, meaning and contextualization

Their initial experiment used a set of five questions designed to stimulate processing from shallow to deep. Success of retention increased from less than 20% up to 96% from the first to the fifth level (Craik & Tulving, 1975), validating their hypothesis. However, it is interesting to note that under intentional conditions (subjects expect a retention test) LOP did not significantly affect short-term retention, only long-term retention, but under surprise conditions LOP affected both short and long-term retention (Rose & Craik, 2012).

Theory Comparison

The core concepts in these theories are knowledge, learning, and memory. The distinction between knowledge and learning, proposed by Piaget (1964), is that knowledge is spontaneous, organic, and fundamentally operational whereas learning is provoked, task-specific, and largely dependent on, and resulting from, the developmental stages of knowledge creation. So how does memory, as explained by LOP theory, fit into this paradigm of knowledge vs learning?

The LOP studies are largely based on what Piaget would probably identify as the realm of learning. They are methodologically based on relatively simple memory tests of pre-existing knowledge and serve no purpose beyond the task of the experiment (Craik & Tulving, 1975; Rose & Craik, 2012; Bird, 2012). However, it seems anecdotally self-evident that LOP theory is also applicable to what Piaget would call knowledge creation. Arguably knowledge creation is somewhat dependent on the progression in processing levels in the developmental stages, which lines up well with the shallow to deep paradigm. The function of memory must therefore be present in both knowledge creation and learning, and mature knowledge creation is characterized by deep processing.

Implications for Foreign Language Instruction

Two observations stand out from my own practice. First, progression in fluency levels strongly resembles the developmental stages. A beginner must start at the sensorimotor stage, regardless of age, and work their way up. Secondly, mastery of a new word is dependent on a deep processing level, at a mature developmental stage, as is the most advanced level of fluency, the ability to abstract new meanings and uses for the language. This may explain the overall poor

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performance of formal language instruction if the practical constraints of formal schooling preclude deep processing at a mature developmental stage. It may also explain why children seem to learn faster than adults. In my experience adults are taught differently. If, like children, they took the time to progress through the developmental stages, adults would likely learn the language much faster and comprehensively than a child could. Especially given they have the advantage of a pre-existing knowledge structure.

Foreign language instruction has two challenges, our own human bias as learners and teachers, and our cultural hyper-fixation on productivity and efficiency. Nobody expects a five-year-old child to be able to immediately understand the abstract meaning of a new word in a foreign language, only its structural characteristics and in time it's representation. Yet both teachers and students expect adult learners to understand the abstract meanings of foreign words immediately following their structural understanding. This occurs partly because adults can in fact move quickly through the stages, especially for relatively common words, simply by translating them. However, this "shortcut" does not indicate complete knowledge creation, and it certainly does not work for higher levels of fluency given the fundamental differences inherent in languages. Put simply, you cannot translate abstract language, you must take the time to learn it the same way a child does.

Case Studies

Learning a new language deeply and creating true knowledge is time intensive. I often spend 3-4 times longer on a language point with my students than is called for in the textbook once they reach the intermediate level which is where most students in formal instruction at school plateau. As counter intuitive as it seems, spending that extra time to process deeply and create new knowledge in a staged fashion actually results in much better and faster acquisition in the long-term. To properly showcase these points, I have selected four specific experiences that will constitute our cases, two as a student, and two as a teacher, each set consisting of a positive and a negative example.

Learner Case Study 1: Learning English, Positive Example

At approximately nine years of age, I found myself living and attending school in an English-speaking country having had only limited exposure to English media. Remarkably, within 4-6 months I had attained top levels in English in my class. From a developmental standpoint I was old enough to have attained the fourth stage of development and was an avid reader. However, what really made a difference was my attitude and approach to the language, and the relative lack of formal instruction. I was old enough to be able to move comfortably through all four stages of learning, but most importantly I was young enough to do so unashamedly.

Early in the process my engagement with the language was sensory based, learning to recognize letters, words, spelling, and pronunciation, a relatively shallow processing level. Once I developed the skills to be able to correctly sound out words and spell without help, learning their symbolic representation came quickly and easily and retention became easier at this deeper processing level. As my vocabulary expanded so did my understanding of the logical structures of the

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language and, on this foundation, I was able to abstract meanings and use the language artistically to express myself.

My acquisition of English as a foreign language closely resembled the progression through Piaget's (1964) developmental stages as well as his conception of natural, spontaneous knowledge creation. As I moved through the different stages I utilized increasingly deeper levels of processing leading to excellent retention, an expected outcome based on LOP theory (Craik & Tulving, 1975; Rose & Craik, 2012; Bird, 2012).

Learner Case Study 2: Learning French, Negative Example

In contrast, my experience with learning French could be described as the exact opposite. I began learning French in grade 7, so I was already older. I had very little prior exposure to the language, and my learning took place almost entirely through formal instruction in school. I attended French immersion school for about 5-6 years and although I could understand it well enough to get by, I could not speak it comfortably. After graduation, my fluency dropped through the years to the present day where I can understand only simple and slow conversations, and I need considerable thought just to produce a simple sentence.

I would characterize my formal instruction as taking place mostly within the first two developmental stages, with emphasis on memorizing the structural properties of words through constant repetition and representation, which never went beyond their most common uses. There were some traces of the third stage in the later years as a natural consequence of advanced materials, and I fail to recall any real examples of the fourth stage, of true abstraction. Consequently, the learning rarely if ever reached the quality of knowledge creation and the processing levels remained relatively shallow, leading to suboptimal understanding and poor retention.

Teacher Case Study 1: Tereza, Positive Example

In the summer of 2019, I completed my TEFL certification and began teaching private lessons in Prague, the Czech Republic, through a language school. I was given two students in my first week, including Tereza. Her experience with learning English resembled my experience with French, except that she had received formal instruction throughout her entire schooling. Furthermore, she had been taking these private lessons weekly for approximately three years and worked in an international company where the lingua franca was English. Naturally she was more proficient than I was in French, but to my surprise not by much. Within the Common European Framework, she was at about a B1 level, although her speaking and writing skills were closer to A2. She was a diligent and clever student, so I attributed this reality to poor instruction.

Her progress was slow at first, she was somewhat frustrated with the slow pace of my lessons and my instructional style, which can be described as conversational and unfocused. I did bring formal lesson plans and other materials, but I allowed conversation to flow naturally to any topic or language point that came up. I was not too concerned with how quickly we moved through the

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materials or even if we covered each point on the way. Despite her initial resistance, once Tereza started to have positive “aha” moments in our lessons, she became quite engaged. These were moments of genuine knowledge creation and they often occurred in the unfocused, almost rambling, conversations, as I was explaining the multiple meanings of a word or its historical development or walking her through the linguistic abstraction of idiomatic language, from its historical context to the abstract idea that it represents in modern usage.

These are perfect examples of activating the most developmentally advanced mental operations (Piaget, 1964) and of the deepest level of processing (Craik & Tulving, 1975; Rose & Craik, 2012; Bird, 2012). At the end of Tereza’s first academic year as my student, she was confidently engaging in C1 level exercises in both receptive and productive skills.

Teacher Case Study 2: Petr, Negative Example

I took Petr on in the spring of 2020. At first Petr seemed like any other mature student who had studied English throughout his life. Although his level was like Tereza’s, when we first started, I quickly learned that he came with a unique set of challenges. He was more resistant to my teaching style, presumably because being older he had many more years of experience of the typical formal approach. Despite my continuous explanations and pushing, to help him adapt how he was learning, he simply kept on doing what he had always done.

It was virtually impossible to engage in free flow conversations with him. His responses were short, surface level, and not conducive to further dialogue. He was keen on the formal materials and simply wanted to go through the exercises and make notes on how to pronounce words and what they meant. He seemed to think that with enough study of pronunciation and sentence structure he could somehow skip the practice component.

He approached the study of English as what I can only describe as a purely academic endeavour, such as math or history. This precluded true knowledge creation, the lessons never went beyond a learning experience in the Piagetian sense, and his processing was kept firmly in the shallow levels. Consequently, he was rarely if ever able to activate the operational activities associated with the later stages of development such as logic and abstraction (Piaget, 1964) and his retention rate was consistently poor leading to incredibly slow progress (Craik & Tulving, 1975; Rose & Craik, 2012; Bird, 2012).

Conclusions

Piaget’s (1936, 1964) work shows us the process of knowledge creation through four developmental stages, and although his work focuses on childhood development, the practice of foreign language acquisition gives us a unique perspective into how these stages continue to manifest themselves well into adulthood. After all, when learning a new language, we all start as infants. Craig & Tulving’s (1975) work effectively articulates how depth of processing is integral to retention, a key part of true knowledge creation, especially in languages. Together these two theories give us a framework for understanding one of the most foundational of human

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experiences: learning and utilizing. This isn't learning in the traditional top-down classroom setting, focused on memory drills and repetition. This is something deeper, a biological process inexorably rooted in our cognitive development and integral to the mastery of our life competencies.

The framework is surprisingly well suited to the field of foreign language acquisition. As a teacher I have always strived to help my students understand that learning a new language resembles more the training of a sport than an academic endeavour. Language is biological, straddling the line between cognitive operations and embodied actions. Its production is a fine motor skill, and its reception is an exercise in abstraction. My practice as an English teacher did not come as the result of formal training, having no teaching degree beyond my TEFL certificate. Therefore, it had to be shaped by something else, namely my own experience learning foreign languages, and on simple trial-and-error to discover what worked.

Upon reflection on the scholarly landscape discussed here, I am pleased to conclude that I have, quite unintentionally, stumbled upon the beginnings of a method that is well backed by academic literature and could very well be structurally sound and scalable. I have much work ahead of me in continuing to understand and study how these principles of developmental stages and levels of processing play a part in my students' learning and how I can make use of them to become a more effective educator.

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