Every Student Needs a Learner Profile
Driving Self-Regulated Learning

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Abstract
Self-awareness of one's unique combination of strengths and needs is an essential first step of self-regulated learning. However, research suggests that most students lack the self-awareness they need to make good learning decisions.

An objective learner profile of how a student understands and retains best, their cognitive strengths and needs in the areas of reasoning, memory, processing, and executive functions, can play an instrumental role in developing student self-awareness. Since these are hidden skills, most students and teachers benefit from deliberate training on how to identify and support students' strengths and needs. Once foundational self-awareness skills are established, students are well-positioned to become self-regulated learners.

Keywords
learner profile, jagged profile, self-regulated learning, self-awareness, cognitive skills, Dunning-Kruger effect, expert learner

DEFINING THE LEARNER PROFILE
The use of the term "learner profile" is widespread in education circles. However, there is little consistency about what type of data should be included in a learner profile and how that data can and should be used to guide administrative decisions, support instruction and develop student self-awareness and self-efficacy.

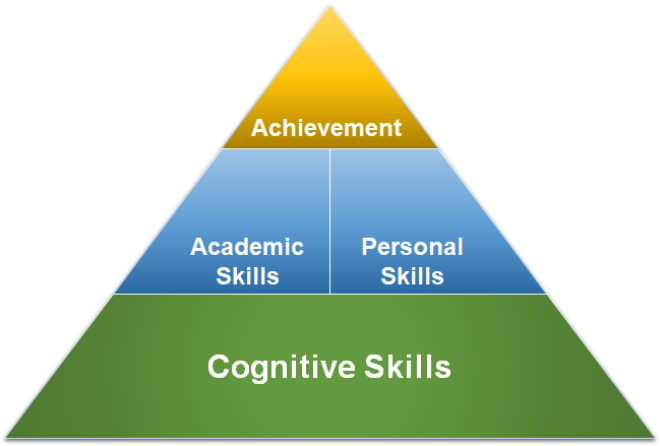

Figure 1. Visualization of Cattell Investment Theory

Herein, a learner profile is defined with a primary focus on objective measures of a student's cognitive strengths and needs, as cognitive skills are well-established to serve as the foundation for all academic and personal skills development. (Cattell, 1971) Cognitive skills determine how efficiently students understand, retain and can convey information across a variety of formats. The learner profile includes 10 cognitive skills that span four domains of speed, executive functions, reasoning and memory. (See Appendix, Table 1)

Jagged or Asynchronous Learner Profiles
Learners are dependent on various combinations of cognitive skills to enable their learning in different subjects and contexts. For example, working memory, verbal memory and verbal reasoning work together for reading comprehension. Visual memory and working memory are used for math calculations. Spatial perception and abstract reasoning are essential skills for interpreting graphs and geometry problems. (Hegarty 1999) However, there is limited correlation between skills in any given individual. (Rose, 2016) In other words, just because a student is stronger or weaker in one skill tells us very little about their performance on another skill.

Mindprint data suggest that over 80% of students have statistically significant asynchronicities in skills, defined as differences in skills within a domain or across domains of >0.5 standard deviations.

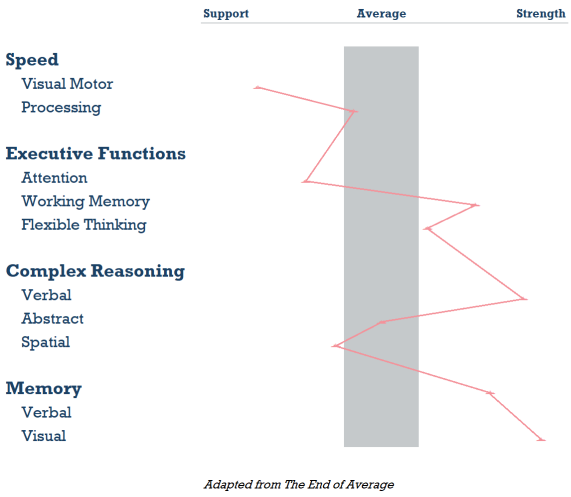

Figure 2. Sample Jagged Profile

Self-Awareness
When teachers understand a student's learner profile, they can offer the optimal means of representation and engagement to enable the student to learn most efficiently based on the learning task and environment. Unfortunately, cognitive skills are not readily observable. It is often very difficult for educators to identify which cognitive skill is at the root of a student's learning struggle. Or, for those adopting a strengths-based approach, which cognitive strengths can be leveraged to make learning more efficient and enjoyable.

Furthermore, even the most determined and otherwise self-aware students might not recognize which skills are causing their difficulty and/or how they learn best. Research from Kruger and

Dunning suggests that most students lack self-awareness of learning strengths and needs. (Kruger & Dunning, 1999)

It is arguably this lack of self-awareness and support of these differences that is so often the cause of student confusion, frustration, and despair. Or, in the case of high achieving students, high stress levels associated with the fear that their asynchronicities aren't being considered. (NYU, 2015)

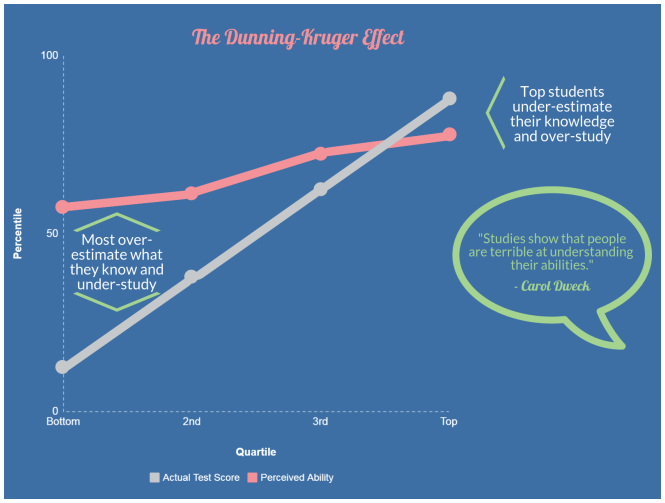

Figure 3. Dunning-Kruger Effect

Self-Regulated Learning

Instruments are available to objectively and efficiently develop a learner profile that can be used for the benefit of teachers, parents and students. Anticipating which supports younger learners need can engender self-confident and self-aware learners. As students mature, they can be guided to recognize how they learn best and self-advocate based on their developing self-awareness. While some might give pause to openly acknowledging learner needs, research would support that the most successful learners are those that accept and compensate for their weaker skills rather than deny their existence.

With a strong foundation of self-awareness, students are best prepared to become expert learners. They can use their knowledge of how they learn best to plan their own learning.

As adapted from the Iterative UDL Planning Process, this involves having students set realistic goals and ensuring that they choose strategies that are most likely to enable them to reach those goals. (CAST, 2014) As student's progress in their development, they will need ongoing adult support and guidance. This will include learning how to effectively accept teacher feedback, reflect, and adapt when they encounter unexpected obstacles.

Teachers will discover that students will require different levels of support at each process step. Many learner-needs, albeit not all, can be anticipated based on the student's learner profile.

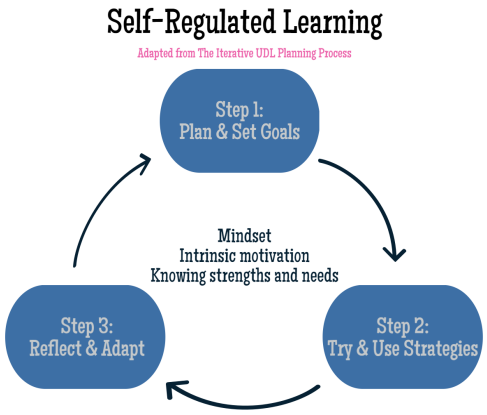

Figure 4. A Universal Model for Self-Regulated Learning

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APPENDIX

TABLE 1: COGNITIVE SKILL DEFINITIONS AND EXAMPLES

Skill	Definition	Examples
Visual Motor Speed	Using your eyes and hands at the same time to complete a task	Typing; playing video games; sports that depend on eye-hand coordination
Processing Speed	Reading, hearing or seeing information, thinking about it, and responding	Answering a question in class; finishing a test in the allotted time; taking the recommended time to complete a homework assignment
Attention	Focusing and completing a task, even if you don't like it	Listening carefully in class; completing homework without being frequently distracted
Working Memory	Juggling all the information you need to solve a problem or complete a task	Listening to your teacher while taking notes; packing up everything you need for school or home; following directions from your coach, teacher or parent
Flexible Thinking	Accepting feedback and adjusting	Figuring out how to correct your test or paper from what your teacher wrote; compromising after a disagreement with your friend or sibling; identifying multiple approaches to solve a problem
Verbal Reasoning	Understanding what you read or hear	Understanding themes of a book; understanding class discussion; picking up on nuances in a text or conversation
Abstract Reasoning	Understanding patterns, puzzles or other non-language-based information	Figuring things out by observing; understanding math and science concepts that you can't always see or touch such as gravity, atoms or algebra
Spatial Perception	Visualizing objects and how they move, even if you can't touch them	Picturing how pieces of a puzzle would fit together even before you touch them; imagining how you would draw a picture to scale or build something; visualizing 3-D objects without a model
Verbal Memory	Remembering what you heard or read	Remembering a conversation, someone's name, or the specific details of a book you read
Visual Memory	Remembering what you saw	Remembering the details (color, size, shape) of pictures you saw, objects you've held, or places you've been