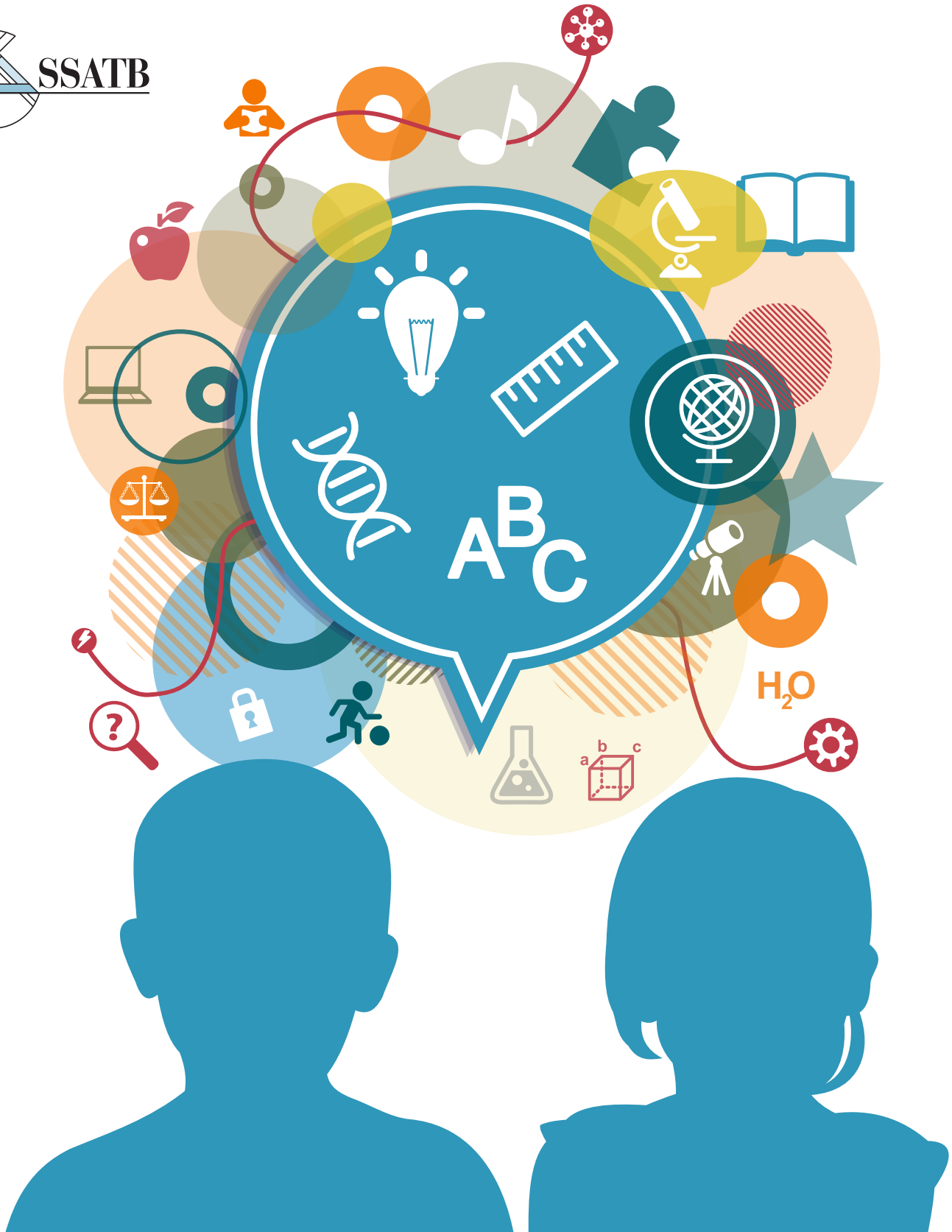
ThinkTank

on the Future of Assessment

SSATB



The SSATB Think Tank

Dear Colleague:

A little over two years ago, I had a profound conversation with Choate's Ray Diffley who – at the time – was the leading independent school admission director conducting research on non-cognitive traits within Choate's admission process. Inspired by the work of Dr. Robert Sternberg, the Choate team was building a holistic process to better understand its applicant pool. Incorporating Sternberg's Triarchic lens and with close ongoing work with Yale's Child Study Center, the active research at Choate has yielded even better, more predictive admission results. Following our initial dialogue, Ray and I discussed ideas for how we might educate admission leaders about "non-cognitive" methods, and SSATB's first Think Tank on the Future of Assessment was born.

With four independent school-experienced practitioners (Choate's Ray Diffley, New Canaan Country School's Nancy Hayes, Westminster School's Marjorie Mitchell, and 21st century education consultant & guru/former head of school Jonathan Martin), the SSATB Think Tank has spent the last 18 months in discovery – hoping to educate, inspire, and influence independent school practices about in-depth student assessment. As you will see on the facing page, we have even constructed a graphic to represent our findings about 21st century student assessment, detailing three distinct areas which are important for holistic review. While we've been focused on understanding assessment from many angles, the Think Tank is also committed to ongoing education and sharing of our findings.

A Special Thank You

We would like to extend our gratitude to Jonathan E. Martin, who was the source of much of the material contained herein; Jonathan interviewed subjects, solicited information from schools, and profiled some of the biggest thinkers in non-cognitive assessment today.

Thus, we're thrilled to offer this second Think Tank publication. This report continues to explore assessment within the independent school admission process but also considers the "workforce" angle. We've interviewed employers and industry opinion leaders about what they are seeking from the next generation and are happy to report that traits such as emotional intelligence, academic mindset, locus of control, grit/resilience, collaboration, empathy, and creative problem solving are increasingly sought after by corporate leaders in their hiring process. (By the way, in the view of SSATB's Think Tank, these traits are hallmarks of an independent school education — we just need to actively measure and report results in order to demonstrate that independent schools create exceptional outcomes for students.)

The SSATB Think Tank has enjoyed a satisfying professional journey which ends in September 2014 when we deliver 10 recommendations to the directors of SSATB. Don't miss the Think Tank track of sessions at the Annual Meeting in Orlando, FL where noted "workplace" expert Amy Wilkinson will be a featured (see interview on page 25.)

In closing, I want to publicly members of the Think Tank for making this journey possible and thank Ray for his leadership in this arena. It has been a highlight of my professional life to be engaged with such stellar, thoughtful colleagues in important future-focused work. I look forward to furthering the vision of the Think Tank, so that the independent school community might redefine what it means to be intelligent in this globally focused, interconnected world. Friends, character matters!

Heather Noelle

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Director of Admission, Choate Rosemary Hall (CT)

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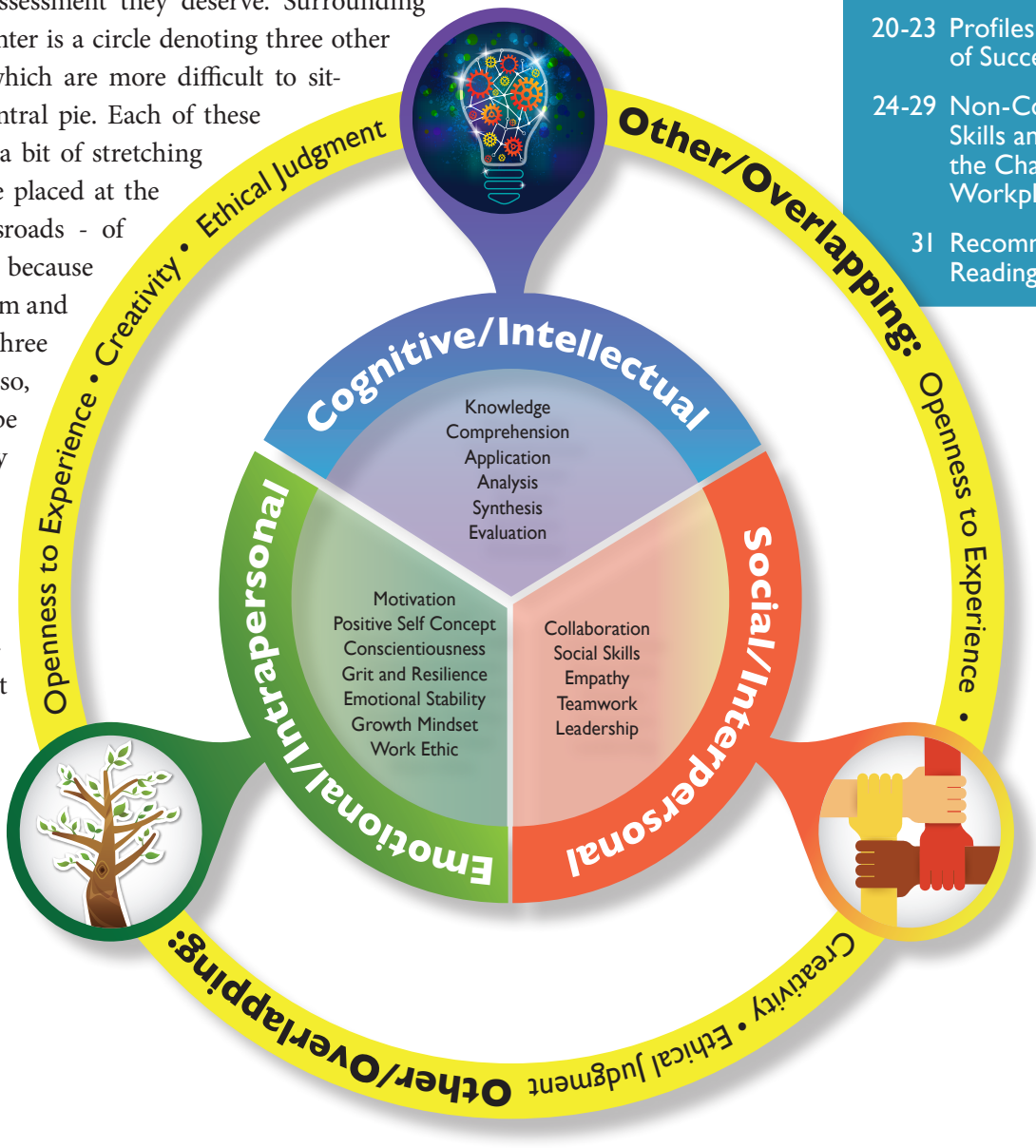
The Non-Cognitive Landscape

Many conceptual models exist for framing the array of competencies, skills, aptitudes, traits, and attributes deemed most important for success as a student, professional, and citizen. The Think Tank has focused upon Sternberg"s "Triarchic" Theory of Intelligence (Analytic, Creative, Practical), psychology's well-established "Big Five" personality traits (Extraversion, Agreeableness, Open-ness, Neuroticism, Conscientiousness), and the National Research Council's recent authoritative statement on the subject, Education for Life and Work (Cognitive, Interpersonal, Intrapersonal). The Index Group, with its new Mission Skills Assessment, is another important contributor to our conversation; its six items are Creativity, Ethical Judgment (Integrity), Curiosity/Intrinsic Motivation, Resilience, Teamwork/Collaboration, and Time Management.

In the course of our deliberations, we at the Think Tank have arrived, at least tentatively, at the conceptual map presented here. We believe that a large proportion of the important qualities deserving of attention are captured in the three wedges at the center, and that schools should be (at minimum) considering whether they are giving each of these three wedges the thorough instruction and assessment they deserve. Surrounding the "pie" at the center is a circle denoting three other important areas which are more difficult to situate inside the central pie. Each of these three could, with a bit of stretching and massaging, be placed at the center - the crossroads - of the three wedges, because they each draw from and contribute to all three wedges. To do so, however, would be to suggest that they are of greater value, substance, or importance than the three wedges themselves, a suggestion we do not wish to convey.



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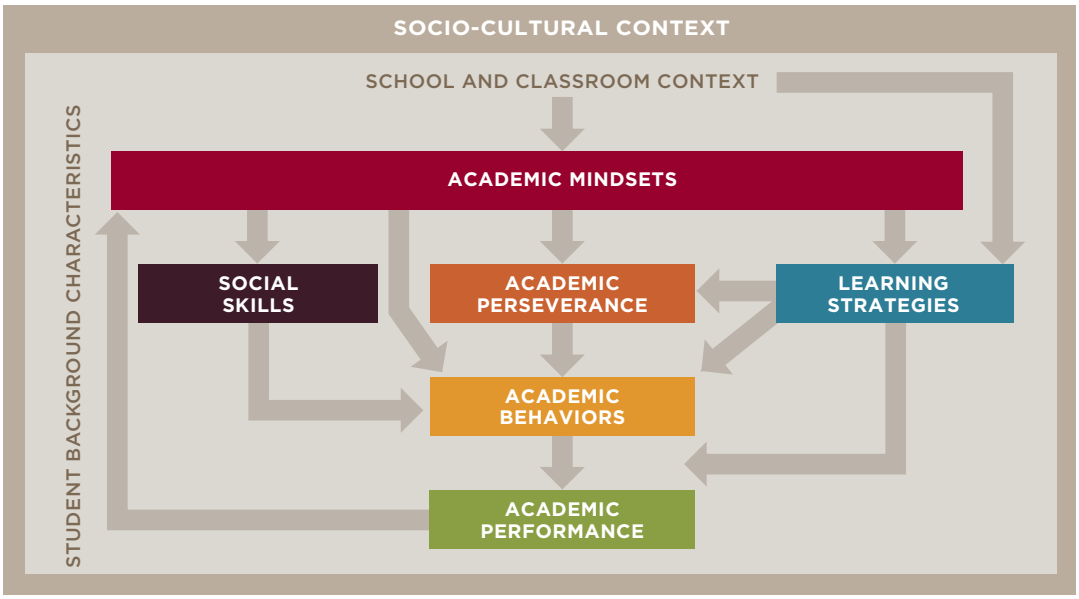
Academic Mindsets:
Building on the Work of Carol Dweck

Camille Farrington, Ph.D.

Growing ripples of influence and action are emerging and extending from the influential research of Stanford Psychology Professor Carol Dweck. Whereas the term "growth mindset" was little known half a decade ago, now it has become a widely recognized and critically important part of the educational landscape. Our 2013 *SSATB Think Tank Special Report* featured Dweck as one of the four Big Thinkers most influential in our first year of research. In our second year, we've been examining a "second wave" of ideas and practices growing out of Dweck's work – academic mindsets.

Camille Farrington, Ph.D., University of Chicago

One important leader of the new academic mindsets movement is Camille Farrington, Ph.D., a researcher and assistant professor at the University of Chicago. Her research on adolescent success factors burst into the national conversation a year ago with a report entitled *Teaching Adolescents to Become Learners: The Role of Noncognitive Factors in Shaping School Performance.* In this excellent report (available for free download), she explains that the academic behaviors necessary for successful performance are driven by a set of academic mindsets and learning strategies.



Reprinted with permission. From *Teaching Adolescents to Become Learners.*

In a more recent paper for the Hewlett Foundation, *Academic Mindsets as a Critical Component of Deeper Learning,* Dr. Farrington argues powerfully for the importance of academic mindsets: "Academic mindsets are 'the psycho-social attitudes or beliefs one has about oneself in relation to academic work,' and these attitudes and beliefs are often what compel students to engage in learning – or not. As psychology researchers Dweck, Gregory Walton, and Geoffrey Cohen put it, 'Students need to think of themselves and school in certain ways in order to want to learn and in order to learn successfully.'"

Four mindsets loom largest, and in both of Farrington's papers, careful research is marshaled to support their significance. In her writing, she articulates each mindset in a student's voice: "I belong in this community"(belonging); "I can succeed at this" (self-efficacy); "My ability and competence grow with my effort" (growth mindset); and "this work has value for me" (purpose/relevance).

In a recent interview with SSATB's Think Tank, Farrington explained that she is developing assessments for each of the academic mindsets, to guide the work they are doing in Chicago schools and beyond. "Our goal is to understand the extent to which academic mindsets, behaviors, and perseverance are stable within a child, or if they change over the course of a day based on classroom context. We are using student self-report survey measures, asking kids a bunch of questions about their perspectives and beliefs. Overall, we designed these surveys to serve two purposes: to build our understanding of how non-cognitive factors develop, and to provide feedback to schools and teachers on kids' experiences of their learning in order to improve educational practice."

She cautioned that her surveys are not intended for individual student assessment or reporting. When asked whether it might make sense to assess and evaluate these important, success-predicting mindsets in the context of admission selection, Farrington emphatically conveyed her opposition. "I don't think the science is anywhere near where it would need to be for me to feel comfortable using mindsets measures as criteria for selecting students for educational opportunities.

"My working hypothesis is that academic mindsets are the product of a student's previous experiences and opportunities. Students with more opportunities and support for learning –particularly those lucky enough to have really engaging opportunities – tend to have more positive academic mindsets. Therefore, I am very wary of using academic mindsets as selection criteria for schools."

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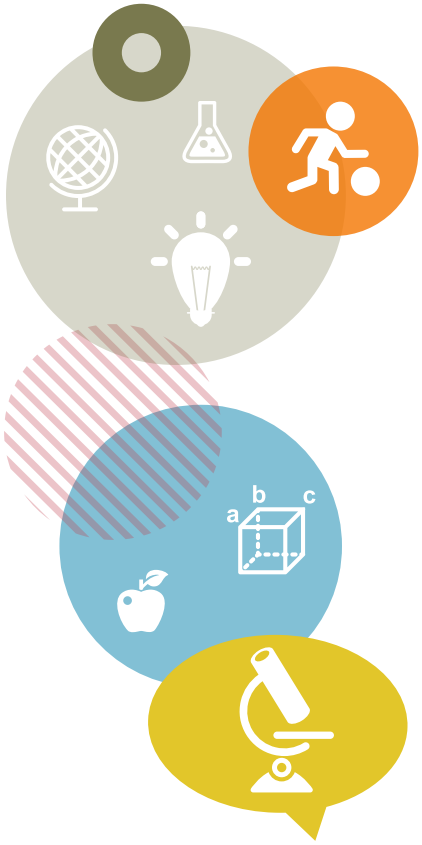


Carissa Romero, Ph.D., Stanford University

While in California, the Think Tank visited Stanford University to meet with another "Dweckian," Carissa Romero, Ph.D., Associate Director of Stanford's PERTS, "an applied research center which promotes academic motivation to raise student achievement on a large scale." Dr. Romero explained the center's grand ambition: to generate large-scale interventions, using technology and evidence-based practices, to strengthen this same set of "academic mindsets" for students across the country and beyond. "Improving these mindsets is so significant for student success and so efficient an intervention … how could we not be striving to expand this work?"

The PERTS online platform is fast expanding and is intended to be very simple and accessible for users. Behind that simplicity are powerful analytics to support ongoing research. At participating schools (participation is open to independent schools; find out more at http://www.perts.net/home/programs.php), teachers invite students to log in, complete a baseline

(continued on page 30)

Thinkers

From its inception, SSATB's Think Tank on the Future of Assessment sought to identify the "big thinkers" in non-cognitive assessment and understand the importance of each in relation to the independent school community. This knowledge serves as the foundation of our work and has informed our recommendations to SSATB's trustees.

We met with several key researchers, read and debated their literature, attended their presentations, and conceptualized application of our take-aways to our world. Where appropriate, we dug even deeper with these researchers to help us identify the specifics for application in the independent school admission process.

Our latest Big Thinkers article expands our knowledge base about emotional intelligence, diversity, and fake-ability. We hope that these snapshots will open your mind to the possibilities of non-cognitive assessment and will serve as a jumping off point into valuable discussions about your school's selection process.

Marc Brackett, Ph.D.

Yale Center for Emotional Intelligence, and the RULER Program

Yale's Marc Brackett, Ph.D. works in the office formerly occupied by Robert Sternberg, which seems highly appropriate given his life's work. He shares with Sternberg, whom we featured in last year's Think Tank special report, a passion for the idea that the non-cognitive is of equal (or even greater) importance to success in life than the cognitive. Similarly, they share a passion for demonstrating scientific significance of the non-cognitive and for putting their ideas into action.

The mission of his center is focused on nothing less than changing the world though the power of emotional intelligence. Brackett asserts, "The Yale Center for Emotional Intelligence uses the power of emotions to create a more effective and compassionate society. The center conducts research and teaches people of all ages how to develop their emotional intelligence. We do this work, because the well-being and sustainability of our society depends on each of us using our emotions intelligently."

According to Brackett, emotional intelligence is composed of five discrete components:

Recognizing emotions in others and self

Understanding the causes and consequences of emotions

Labeling emotions accurately

Expressing emotions appropriately

Regulating emotions

Aligned with this five-part model is the center's comprehensive school intervention program, called RULER, which "promotes positive youth development by working to improve youth settings, such as schools, by building social and emotional skills in individuals, and improving the overall emotional climate."

The RULER program is expanding quickly, and is being implemented nationally in a wide array of schools - public, charter, and independent. It provides schools, classrooms, and students with a series of tools and techniques which strengthen emotional intelligence, including a school or class "charter" declaring which feelings are valued and sought after in that space, and a mood meter which students can use on an ongoing basis to self-evaluate how they are doing in the moment, and then apply strategies to improve how they are doing.

Promoting greater emotional intelligence demands quality assessment so we can better know which practices are having the greatest impact, and what impact EI ultimately can deliver. Research and analysis has led the Emotional Intelligence team to determine that "self-reports," asking people to evaluate themselves, is simply too ineffective: The fact is that people don't know themselves very well. "Correlation between self-ratings and objective measures is low." Hence, Yale's CEI relies almost exclusively on measuring emotional intelligence as a set of skills and behaviors, asking people to complete various tasks demonstrating their abilities and observing their performance.

Brackett articulates a simple assessment framework:

- Measure beliefs: Ask the person directly: *Are you good at regulating emotions*?
- Measure reputation: Ask knowledgeable informants about the person: *How well does John regulate emotions?*
- Measure knowledge: Ask the person which strategies are effective: *What emotion regulation strategies do you know?*
- Measure skills and abilities: Ask the person to solve problems: *Are you able to regulate emotions in extreme circumstances?*
- Measure disposition: Ask the person his or her tendencies: *Do you experience lots of ups and downs? Are you often moody?*
- Measure behavior: Observe the person in action

As his work relates to admission, Brackett states, "Emotional intelligence, as we define and measure it, is a strong predictor for academic performance, the quality of your relationships with teachers and classmates, and empathy. It certainly should be closely considered and studied as a tool for admission assessment… 50% of college students are reporting depression and anxiety, which says we are missing something—we should think differently how we select kids for college to ensure they have the emotional intelligence to be ready for success in college." Of course, an EI assessment won't predict everything about a student's success in school, but it would be a very valuable component of a broader strategy of assessing what matters for student success.

Bryant T. Marks, Ph.D.

Bryant T. Marks, Ph.D. is an Associate Professor of Psychology at Morehouse College and he serves as a member of the Commission for the White House Initiative on Educational Excellence for African Americans. He directs the Morehouse Male Initiative, whose mission is to identify factors that foster the affirmative personal and academic development of black males. The Initiative is a program of the Morehouse Research Institute and it has its roots in an internal self-study aimed at measuring the impact of the Morehouse College experience on students from freshman to senior year, and on into the rest of their lives.

The work began with a national survey of 1500 black males in college and it continues to be deepened through ongoing research and analysis. At present, a particular area of interest is in African-American male achievement from PK to graduate school. Marks and his colleagues are exploring the educational reform necessary in the K-12 system for improving the outcomes for African-American males. As Marks emphasized, "When you look at a child in the K-12 system, you find that his or her achievement is much more a reflection of the ecosystem the child is in than of individual academic ability."

One very important takeaway for Marks is how critical it is for parents to have educational choices and options. It is essential that parents are able to choose the right school for their child – the one which will challenge, engage, and rigorously prepare their children for academic success beyond high school – which includes a broad education and preparation for the 21st century workforce.

When asked about the key non-cognitive skills most important for success in schools, Marks described four key attributes:

Motivation for and a love of learning.

We need children who really have that desire to learn, who are motivated to seek learning. That is a critical component which too many of our kids lack. We also need parents who are deliberate about what they watch on TV and what kind of conversations they are having at the dinner table. Parents have to model the kind of curiosity and interest in learning that is critical for their children.

Belief and confidence that he can learn.

As a corollary, teachers also have to believe and demonstrate their belief that every child can learn. The best teachers deeply believe this and use multiple methods to help every child achieve.

Sense of trust and belonging.

When schools are checking for weapons or are disciplining students inequitably (for which there is significant evidence), it says, "We don't trust you, you don't belong here." Students also need to feel like their teachers value them and are supporting them in the appropriate academic track if they wish to go to college.

Self-regulation and self-control.

Willpower and discipline are essential. The good news is that willpower can be developed. Being required to do something with regularity and routine is essential. Video games don't build that willpower, but chores and homework do!

Marks agrees that admission officers should try to tap into non-cognitive traits, such as self-regulation, but he cautions against the coachability of an assessment of this type. "But when the time comes for assessing self-regulation and motivation fairly in an admission process, we should definitely do it. If we can select for work ethic and effort, our graduation rates go up and everyone wins."

In reflecting on the work of Angela Duckworth in the areas of self-control and grit, Marks admits, "The conversation makes a lot of sense to me. Angela Duckworth may have popularized the concept of grit, but for someone like me, who has been studying the African-American people's history for so long, it is important to point out that what is now being called grit has been a part of the African- American experience for a very long time."

Patrick Kyllonen, Ph.D.

As most readers are aware, Educational Testing Service (ETS) has a long and deep tradition of providing a wide variety of psychometric tests and services for schools and universities. Indeed, ETS developed the original SSAT for SSATB in 1957, and served as the test's vendor until 1993. What is not as well known is that ETS has been working for over a decade to develop new test "constructs" for non-cognitive assessment.

In September, SSATB Executive Director and Think Tank member Heather Hoerle and members of her team visited with Patrick Kyllonen, Director of ETS' New Constructs Center. Kyllonen is probably most recognized for the development of the Personal Potential Index (PPI), a system for assessing an applicant's suitability for graduate study in the following areas: knowledge, analytical skills, communication skills, teamwork, motivation, self-organization, and professionalism/maturity. His white paper about the PPI is free, easily accessible, and very informative.

At the meeting, Kyllonen shared his delight that character and non-cognitive assessment are becoming so much more prominent. This is something, he explained, that has been his life's work for several decades now, and something with which he is eager to assist organizations in any way that he can. He emphasized that beyond selection, organizations should be using these tools for evaluation of their own success, asking: Are you meeting objectives in developing your people? Do you assess as they come in, assess along the way, assess as they depart? Are you noting whether you are adding value?

Currently, Kyllonen and his colleagues are working the Los Angeles Unified School District (LAUSD) and with a group of Fortune 100 companies seeking to select college graduates. LAUSD is working with a NCLB waiver to develop its own assessment focused not only on the common core academic standards, but also on the district's school climate, and students' non-cognitive attributes. Kyllonen recently returned from a meeting with L.A. administrators and happily shared pictures depicting the process that was used to hone in on the non-cognitive attributes LAUSD would study. Perhaps surprisingly, they simply asked administrators to place a sticker next to those attributes they were most interested in!

Because a non-cognitive "construct" is another kind of skill, an attribute such as motivation or creativity can be put on a scale and psychometrically studied and quantified like any other "cognitive construct," such as the ability to solve algebraic equations. Rich psychological research already exists in areas like motivation or empathy, so Kyllonen emphasized that an organization wishing to assess non-cognitive attributes simply needs to define the construct – what's important and/or what they want – and to determine the method of assessment – usually some combination of self-ratings and ratings by someone else.

Kyllonen also described the innovative item types that are being developed in this area – forced choice, anchoring vignettes, and situational judgment – and emphasized the need to get around "fake-ability." According to Kyllonen, these items are designed to allow for scalability in much the same way as a math question on the SAT. Of course, sophisticated Item Response Theory statistics also help when dealing with the "ipsative" nature of these types of items.

For Kyllonen, the true stakes of his work are enormous. If we can use better assessment of the skills and attributes which make the greatest impact on success in the workforce and in life, we can better educate and train people, improving their lives considerably. Like others in this field, he is inspired and informed by the work of Nobel Prize winning economist James Heckman at the University of Chicago. Heckman, a giant in his field, has many accomplishments to his credit, among them trailblazing research on the power of early childhood education and its particular impact on non-cognitive skill development. To quote Heckman, "There is hard evidence that non-cognitive (or character) skills matter greatly. And there is widespread evidence that failing to systematically develop, measure and reward positive character traits is failing America — in schools and in the workforce."

Rich Roberts, Ph.D.

Educational Testing Service (ETS), SSATB's Princeton neighbor and former partner, has not one but two major figures in the world of non-cognitive assessment. As principal research scientist in ETS's Center for New Constructs, Rich Roberts, Ph.D., has worked on developing non-cognitive assessments for military, workforce, and educational organizations for a decade, and has authored more than 150 journal articles and a dozen books on topics in emotional intelligence and non-cognitive assessment.

In last year's Think Tank special report, we briefly referenced Dr. Roberts in the article about the Mission Skills Assessment (MSA), for which he was the principal research scientist and developer – and have since met with him three times. It is hard to imagine someone being more passionate than Roberts about the importance of non-cognitive attributes. He makes the case for elevating our attention to them, because they are:

- Important to academic success (Poropat, 2008)
- Important to workplace success (Schmidt & Hunter, 1998)
- Valued by higher education (Oswald et. al., 2004)
- Valued by the workforce (Conference Board, P21, 2011)
- Valued across the globe (PISA, 2012)

But how do you organize them? In our conversations, Roberts conveyed the importance of organizing skills and attributes into well-founded and evidence-based categories, and recommended the value of the Big Five Personality Trait model: "openness, conscientiousness, agreeableness, extraversion, and neuroticism."

Since the 1980s, the Big Five model has been widely recognized as having strong, research-supported reliability and validity. Roberts explained that for the purpose of predicting success in educational institutions, the first three of these are most pertinent – openness, conscientiousness, and agreeableness – and he offered a cross-walk of what the MSA measures with the Big Five, and other important, sought-after non-cognitive attributes.

Moving from what we should measure to how we should measure it, Roberts discussed his research and shared his views on the issue of "fake-ability" in self-assessment, drawing upon a recent book he edited, *New Perspectives on Faking in Personality Assessment*. On the whole, his conclusions are gloomy about the use of self-reports in any type of high-stakes assessment, such as for hiring and university admission. For example, the chapter *least* skeptical of self-reporting is entitled "People Fake Only When They Need to Fake," which is hardly reassuring. Some of the book's suggestions for how to reduce the fake-ability problem in the use of self-reports are:

- Make the questionnaire more complicated. "Desirable-sounding and undesirable-sounding items are rephrased to sound more neutral, and test takers will not be tempted to alter their responses." (p. 320)
- Ask for verification. So-called "biodata" and "elaboration" tactics require survey takers not just to rate themselves but to supply evidence supporting their claims. Instead of stating "Yes, I am a hard worker," students are required to provide an example of this attribute. (p. 320)
- Force choices between multiple positive responses. In this technique, a school or test organization would determine a relatively finite set of specific sought-after attributes, say four or five, and then generate a set of another ten to fifteen attractive characteristics. Applicants are then required to select from a list of positive attributes, not knowing which the organization prefers. (p. 321)
- Warn applicants not to cheat. This strategy has been widely studied, but the results have been inconclusive at best. Only warnings which are persuasive that the organization can effectively detect faking AND will punish fakers seem to have statistically significant effects, and meanwhile, even these can have the negative result of depressing the responses of the honest respondents, due to their anxiety about getting caught. (p. 323)

Mission Skill	Big Five Personality Trait	Other
Creativity	Openness	Broad Retrieval Ability
Resilience	Neuroticism *(absence of)*, Openness	Locus of Control, Self-Efficacy
Curiosity	Openness	Motivation, Growth Mindset
Teamwork	Agreeableness, Extroversion	Emotional Intelligence
Ethics	Agreeableness	Integrity, Honesty, Altruism, Concern for Others
Time Management	Conscientiousness	Grit, Work Ethic, Perseverance

Angela Duckworth, Ph.D.

After she lit up the stage at the 2013 SSATB Annual Meeting in Philadelphia, SSATB caught up with Dr. Angela Duckworth, a conference keynoter, about her ongoing research in non-cognitive assessment and about what independent school admission professionals can learn from it.

Q Can you comment on the various criticisms of "grit," such as the argument that kids need more "slack" in their lives, not more grit?

I'm not familiar with all of the counter-arguments, but it is not my claim that grit and self-control are the only things that matter. Students do need to be curious, hang out with their friends, and do nothing some of the time - yes, yes, yes. These are all important things for kids growing up and living happy lives. We have heard of schools focusing on work too much, and to those schools, I would say let's not squeeze the joy or fun out of childhood.

But, we also need to remember that there is great and meaningful joy in doing things well and working hard. To me, if kids could develop grit and self-control, then the picture of their lives as a result is not a picture of their working all the time. These two attributes mean that they can work efficiently on what matters to them, and that they can work effectively on less exciting things when that needs to happen. A student or an adult who is a paragon of grit and self-control would have lots of time left over for goofing off. The sad thing is that kids too often waste a lot of time working, but not working efficiently, leaving them less time in the end for so-called "slacking off."

Q What advice would you give admission officers about factoring non-cognitive attributes into their admission decisions?

I know that very good admission officers already do what I recommend: they take a holistic view. They look for patterns among the recommendation forms and the students' extracurriculars, and they use their judgment to determine when there is a compelling pattern of evidence that a kid is resilient and gritty. So, when I say "holistic," I mean relying on many data points and on intuition. You can't just use an algorithm; you also have to use your judgment. If a teacher recommendation says the kid is really gritty, and there is no other evidence for that, you can't really count that. We call this "triangulating" the data, and it is critical.

In 1985, ETS worked on assessing some of these attributes for college admission, and they sought to quantify so-called "follow through." They took a look at extracurricular activities more rigorously and worked to apply a rubric, with points awarded systematically. Points were coded to the top two activities a student committed to, and only the top two, putting the emphasis on depth, not breadth. In one project we're doing, we followed the same technique. Follow-through rating is a strikingly robust predictor of college outcomes and leadership. Follow-through is really grit. You can quantify a student's commitment to his or her priority activities and his or her advancement in those activities, i.e. the continuity and advancement in those things the student really cares about.

Q What is your top recommendation to schools seeking to enhance their students' non-cog attributes?

This is certainly a fast-rising, national conversation. I know, for example, that there is a new Coursera course available on teaching kids character.

The bottom line for me is that this national conversation is a great thing. What we want are entire school faculties talking about gratitude, or mindset, or self-control – and focusing the school conversation and school initiatives around these themes. All schools have had their mottos and principles long before this movement, but if everyone in the school community were to embrace the same or very similar language and works to reinforce these things consistently, that would be one very meaningful victory in itself.

What is most important is that schools consider how what they are already doing can be amplified and how what they are already working on can be deepened – and then to really go with their strength.

To view the full interview with Angela Duckworth, visit www.admission.org/thinktankreport14.

Building for Their Future

Choate Headmaster Alex Curtis, Ph.D., is very confident about what he knows and very clear about how much he doesn't know about the future.

He's certain that technology will have a major impact on education, and that learning in the future will be very different from today—but he's frank in sharing that he doesn't know exactly how. Meeting with the Think Tank on the Choate campus with his iPad in hand, he told us that he recognizes its limitations today—some math programs for instance, aren't now supported on it—but that it is only by using it now, exploring its capabilities, testing and challenging its limits, and inventing its possibilities, that it can reach a potential in five years which is unknowable today. It is only those schools now using the iPad which will most benefit from its full capacities in the future.

Curtis told us how surprised he was to hear so many of his colleagues at a recent conference dismiss some of the far-reaching changes technology and digital courses are bringing to schools. The forthcoming combination of online learning with virtual reality (VR) experiences, such as those engineered by Oculus VR, recently purchased for billions by Facebook, are going to be game-changers: students will be able to sit at home and feel as if they are in class with the best teachers in the world. "We can't just say that our traditional classroom instruction will provide us our market value," Curtis emphatically repeated. "It won't be; it can be replicated." At least some aspects of it.

Curtis, a historian of art and architecture, seeks to achieve this value in significant part with the design of new learning spaces. In his very first board meeting as head, he explained to us, the board showed him the plans for the multi-million dollar renovation of the vintage, traditionally structured mathematics building, already (conceptually) underway, and asked him his opinion. "We'd be crazy," he said (as a brand new headmaster to his trustees), "not to take this opportunity to provide a new space to inspire modern learning."

Now, three years later, the new building, St. John Hall (named after a former Headmaster) Curtis knew was needed is under construction, but even Curtis doesn't know exactly how these new spaces will be used. Based on a brainstorm hatched while on an exploratory trip with a contingent of faculty to Silicon Valley, they've chosen to call these innovative and creative spaces "i.d.Labs," because what they do know is that they want a variety of things beginning with i and d to happen there: inspire, imagine, invent, innovate; dream, discover, design. He told us we can't "know" how it will be needed or used a decade from now, and so it is designed, like MIT's famous Building 20, to "evolve" as time progresses, with highly flexible walls, ceilings, fixtures, and furnishings which can be easily removed, added, and adjusted as needed.

In online and VR environments, the classroom lecture can be easily and inexpensively replicated, but other wonderful things can't and won't: the interactions of students with teachers and with their peers from around the world, the free time exchange of ideas, the debating of perspectives, and the generation of new insights and inventions. As Curtis gave our Think Tank team a hard hat tour through the building under construction, he showed us how it sought to support these things.

Alex Curtis

Choate's distinguished headmaster pointed out to us the features which most excited him. "Sure, there'll be some classrooms," but what animated him were the "soft spaces," designed for casual and intentional learning. "Here's the lounge where students can sit in comfy chairs when they enter the building; here's the Starbucks-inspired café at the intersection between the faculty departmental offices and the student lounge; here's the student hang-out area situated at the most scenic and enticing part of the building; here are the extra-wide hallways, built so students are free at any time to toss their backpacks against a wall and sit down on the floor to chat, receiving from their teachers not words of admonition but encouraging conversation."

"These things are what will generate the value-added of high quality independent schools," he believes, because the attributes and aptitude most important for success are intellectual curiosity, engagement, and collaboration.

The Think Tank tours the i.d.Lab construction site, May 2014.

Back in his office, explaining the redesign of his academic administration, Curtis pointed out two important new positions: one person for in-house and ongoing faculty development, "because we all have to be learning all the time," and another for curriculum initiatives. The curriculum initiatives director is forbidden from "spending any time thinking about today, about what the school's doing now," but is expected rather to "spend their time reading, studying, thinking about tomorrow, about what's coming and where Choate needs to be headed. That we can't know what the future will bring doesn't mean we shouldn't be deeply attentive to predicting it as best we can."

Curtis draws upon the school's longstanding tradition of character education to inform its future, and was glad to see it reaffirmed on the aforementioned trip to Silicon Valley, where he spoke with alumni working at companies such as Apple, Google, Pixar, and Twitter to discover which aspects of their education best prepared them to achieve success in today's workforce. Former students recalled their high school experience not by naming specific courses or assignments, but by referencing experiences that taught them to be adaptable, to seek challenges, and to face the unknown with confidence.

Among the things that especially attracted Curtis to Choate three years ago, he said, was the culture of innovation already happening there, exemplified particularly by the admission office experimentation in non-cognitive assessment. In telling us this, Curtis became particularly animated, and our conversation began to extend far beyond its originally planned time parameters. It wasn't just that the boldness and risk-taking the admission office displayed, but its embrace of the importance of assessment. As schools elevate the power and value of the non-cognitive—among them adaptability, confidence, curiosity, and collaboration—it is critical they be able to assess and demonstrate the value-added schools provide in these areas. "Schools have been engaged in assessment forever. The real question is how well have we been doing it? Assessment excellence is essential: I say this again and again, and I think the work you are doing at SSATB is so important."

That we can't know what the future will bring doesn't mean we shouldn't be deeply attentive to predicting it as best we can.

Admitted - A Critical Look at PK-2 Admission Processes

By Chris Bigenho, Ph.D., Director of Instructional Technology, Greenhill School (TX)

The Problem

Independent schools fall into two "growth" models. By far, the most common is the inverted pyramid, through which schools strategically grow their graduating classes at periodic entry points. Fewer schools use a no-growth model, though which all students enter the school at a single entry point with little to no class growth between each year. Schools following this model build their entire graduation class as early as kindergarten, with little chance for corrections and adjustments, and carry the most risk when it comes to early childhood admission.

What do you do when you need to select a small number of individuals from a large pool of applicants to become new members of your school community? Beginning in grade 3, there is a reasonable expectation that students are familiar with a specific body of knowledge which can be measured against a set of standards. So, for grades 3 and up, the selection process looks fairly similar across schools. What if your applicant pool consists of children as young as 3.5 years? What body of knowledge can you test? What becomes important to know about a child that would allow you to determine fit at your school? What does this process look like in independent schools across the United States?

The Study

In 2011, SSATB commissioned a study of nine representative independent schools to explore these and other questions related to the admission process for students from pre-K through grade 2. The study captured a story told through multiple lenses, with many nuanced approaches to the same problem.

All schools in the study required the following items from all applicants:

- Completed Application
- Teacher Evaluation/Recommendation (K and up)
- Group-Play Testing Session
- Individual Evaluation
- Parent Interview
- Transcripts (grades 1 and 2)
- School Visit

While there were subtle differences between schools in each of these areas, the areas demonstrating the greatest differences were the individual assessments and the group-play testing sessions.

Individual Assessments

Most schools in the study use some form of IQ, abilities, or developmental assessment. While none of the schools were excited about this type of testing with children as young as 3 ½ years, they reported a need for some type of individual assessment, and all realized value from the process – even if it were only to identify obvious differences in scores and/or to review examiners' notes. However, the variety of tests and methods that were used across schools indicates a lack of clarity on what should be tested at this age and how it should be done. Some schools, in an effort to make the process easier for families, were comparing scores from tests measuring completely different constructs. This practice has the potential of confounding these comparisons and threatening the validity of that part of the process. Additionally, schools in highly-competitive markets reported threats to test validity from aggressive test preparation, and reported taking measures in an attempt to outmaneuver parent intervention.

Schools in less competitive markets reported greater freedom as to how they approached this part of their admission process. Some of these schools differentiated themselves in the study by using tests and testing procedures developed in-house, in which they used current student scores as benchmarks. Unlike schools using off-site testing services, these schools have the advantage of seeing the students personally during these assessments.

Playgroup Assessment

While the playgroup assessment was a common practice among schools, there was little consistency across schools as to how they assembled, administered, and scored playgroup assessments. In some cases, this lack of consistency and standardization appeared across years within the same school. Nearly all schools reported that direct observation of the child interacting with peers, teachers, parents, and their environment was the most important part of their process.

While each school developed its own playgroup assessment practice, most included some form of academic or individualized assessment. This might include math worksheets used in their current program, or small group and individual reading activities. Some also drew from achievement assessments, which are normed for administration in late May. Since this norming does not align with the admission

schedule, these tests were often regarded as too easy or too difficult, depending on the selected assessment. In all cases, rolling enrollment was practiced, and this also presented challenges when comparing scores of applicants across time.

Looking Beyond Current Processes

It was universal among the schools studied that, while the processes they had established worked, they were interested in exploring processes that might work better for the child, and even tap into other areas – what many are calling "non-cognitive" skills. The questions being explored today are asking how these skills develop over time and what they mean for success in younger children.

Angela Duckworth from the University of Pennsylvania is one of several researchers leading the charge in this arena (see page X). In a study she published in *Psychological Science*, she reported that self-discipline was a greater predictor of academic performance than was IQ. She also found that self-discipline predicted which students would improve their grades over time; IQ did not. She is now linking this to the idea of "grit" with studies exploring the interactions between "grit" and self-control. The question is: Can grit be assessed, and if so, how early can it be determined?

While somewhat silly, the "marshmallow test," made famous in a study conducted in the early 1980s by Walter Mischel, may be that assessment. Mischel and his colleagues demonstrated that greater ability to delay gratification measured in 4-year-old children predicted greater academic and social functioning and success more than ten years later.

It is clear that direct observation of children in different settings is an important piece of the puzzle. Given this, schools might want to find ways to reduce dependence on outside testing by licensed psychologists and move the testing "in-house," where there would be another opportunity to interact with and observe the child applicant. The challenge is procuring the time and personnel resources for administering these individual assessments. Of course, touch-screen technology and computer-adaptive testing has opened wide the door on the development of user-friendly tools to assess early literacy and mathematical thinking in our youngest applicants. While these kinds of tools might not exist yet for non-academic skills assessment, there is considerable research being focused in this area.

Closing Thoughts

We still have much to learn about how children learn and what makes stronger learners, but there is considerable work being done in the area of non-academic skill assessment, and there are new assessments being developed that address some of the challenges facing admission offices in our schools. There is a real desire to make the process less taxing on the young child and more in line with the learning philosophies of each school, and there is a general desire to move beyond IQ and Abilities assessments with the young child. But, challenges exist in both the culture of the parent/independent school community and with the ability to develop meaningful assessments that can easily be administered by schools.

The big "take away" for this researcher is that the process is not a science. Schools are working with the best tools and processes they have available to them and they are operating with the best interests of the child and school in mind. All parts of the process are informative, not determinative. To that end, anything that can help refine the process and provide additional views of the candidates will be helpful to the process as schools work to determine their next graduating class 13 years in advance of their graduation.

Paulette Altmaier

Khan Academy:
Personalizing Learning, the Online Way

An interview with Paulette Altmaier, Education Partnerships Lead, Khan Academy

Q Can you describe your position and the purpose/role of education partnerships at Khan Academy?

Broadly defined, my role is to help people who help learners learn. My team works with schools, colleges, and other organizations to enable them to use Khan Academy more effectively.

Q We know you are partnering with Andover; can you tell us about your partnerships with schools and whether there are opportunities for more schools to work with you?

Our partnership with Andover is very unique – what we call a "content partnership." Their math department is working with us to develop rich and complex calculus problem sets for Khan Academy, because part of the Andover mission is to help the world beyond their own student body. They volunteered to do this work with us, and it's been great; they've already completed the problems for differential calculus, and are now finishing them for integral calculus.

In general, our partnerships consist of working to help schools and colleges implement our resources, particularly math, and giving them the tools and counsel to be successful. We do work with a few schools as pilot sites, so we can better see what is working in the classroom before bringing out those innovations to the wider world, but those are primarily very local schools, near our offices in California.

Q Can you describe Khan Academy's assessment philosophy?

Ours is a mastery-based model. We strongly advocate for self-paced, mastery learning, which is what we mean by "personalized learning." It is important to recognize that students don't learn at a lock-step common pace. When students use our platform, they can work at their own pace, ensuring they master any particular element before moving on.

Khan Academy founder Sal Khan speaks at the 2011 SSATB Annual Meeting in Phoenix.

As students work through our rich problem sets, our platform provides the immediate feedback all learners benefit from, and when they get stuck on a problem, we give them the step-by-step help to work their way out of it, as well as links to videos to teach them more. This is the support students need for practice and ultimate mastery.

Q Can you describe the way Khan Academy's assessment questions are designed? Are they primarily multiple choice?

We use multiple-choice very rarely in our assessment. Nearly all of them are free response questions. For instance, in geometry we have graphical capabilities so students can actually do rotations, moving a figure around. They can see whether figures are congruent or similar by manipulating them. We've never been a multiple-choice site. In our math problems, students answer by entering the numbers into a box or by what's called "drag and drop" manipulation of things on the screen.

Q Many assessments are moving toward applied problem solving, testing students ability to transfer "textbook" understanding to complex and novel scenarios. What is Khan Academy doing in this regard?

A lot of the new content we are creating is about applying knowledge and skills to real world scenarios, such as by evaluating a newspaper graph on population. This is something with which many of our content creators are assisting us, looking at real world problem solving and application to everyday life.

Q What is the future of assessment at Khan Academy?

I'm not sure I can describe exactly the future of assessment at KA, but I can say we hope very much that the future of learning is focused on competency-based assessment. We shouldn't determine student accomplishment by seat-time in courses or school programs, but by what they know and can do. We think that self-paced, competency-based education is the future of learning.

Q What are you learning about learning at Khan Academy? What are the non-cognitive student traits which make for the most success on your platform?

We're just starting to do this research, but we are very interested in it. Right now we don't have a lot of formal findings, but we do learn a lot from testimonials we receive, and what we are seeing is that the qualities necessary for success in online platforms are not much different from those in the physical world. Grit and the growth mindset apply equally to learning online and offline.

We do know that a virtue of the online environment is that students do not feel stupid online—they can keep asking for help, keep trying things over and over, and keep watching explanatory videos—without feeling embarrassed that they don't get it yet. They tell us, "I don't feel that stress or feel stupid asking for help."

Of course, if you have a great, supportive, encouraging, feedback-providing teacher, that's the best possible place to be. We think students get both with a blended educational environment, which provides the best of both worlds.

As for our research in this area, we think that our online platform offers a terrific, inexpensive way to study these issues. We recently did an experiment with a Stanford program to study the growth mindset in our KA learners. We set up a treatment group, which was provided growth mindset messages such as ""Remember, the more you practice, the smarter you become!" and, "If you make a mistake, it's an opportunity to get smarter!" and set up a control group with generic messages such as, "Some of these problems are hard. Just do your best."

The study found that the treatment group with growth mindset messages had a three to five percent gain in problems attempted, proficiencies gained, and return visits when compared to the control group. We have expanded our analytics team, which is working to study all this more effectively, and hope to be able to really contribute to this field in the years to come.

Q Can you tell us about the new partnership KA has with the College Board for SAT prep? How will that work?

We are very excited about this initiative. It has two general philosophies behind it. First, we must level the playing field that exists in our country around access to comprehensive and effective preparation for the SAT—this is essential, and we think KA can really assist with it. Second, we our site will support students in learning, really learning, the math they need to succeed on the test, rather than just being about test tricks and strategies.

We'll have a whole section of the KA website for this, a self-guided prep course for the SAT. We're building the full program for the newly-configured test arriving in 2016 (with our prep beginning in 2015), and we'll be putting up resources sooner than that for students to prep for the current SAT.

Q Can you imagine a similar collaboration with our organization for SSAT prep?

I doubt we would be able to provide an SSAT-specific preparation course because, frankly, it is an enormous amount of work to build these programs. But students who use KA are preparing all over the world for a wide array of tests, and we believe that the main program can effectively support them in filling the gaps and developing the mastery they need for any test they need to take. Students preparing for a test can come to our site and work on the math content they need, whatever it might be.

Q Do you have any additional messages for our readers?

The main message we have for all educators is to think really deeply about the extent to which schools can personalize learning for all students. Many more students can be successful in math if we give them the time and the resources to learn at their own pace, to practice as much as they need, and to achieve and demonstrate mastery of what they have learned.

Taking A World View

Global Assessment in the 21st Century

Andreas Schleicher is the Acting Director for the Directorate of Education and Skills and Special Advisor on Education Policy to the Secretary-General for the Organisation for Economic Co-operation and Development (OECD). The mission of the OECD is to promote policies that will improve the economic and social well-being of people around the world.

Q SSATB is looking to creating new kinds of tools and techniques to assess student competencies, something you did at OECD in the late nineties. Why did you decide a new kind of test was necessary for the 21st century, and in broad strokes, how is PISA different from other tests?

The dilemma for educators is simply that routine cognitive skills, the skills that are easiest to teach and easiest to test, are also the skills that are the easiest to digitize, automate, and outsource.

There is no question that state-of-the-art knowledge and skills in a specific discipline will always remain important. However, educational success is no longer about reproducing content knowledge, but about extrapolating from what we know and applying that knowledge in novel situations.

Put simply, the world no longer rewards people for what they know – Google knows everything – but for what they can do with what they know. Because this is the main differentiator today, education needs to be much more about creativity, critical thinking, problem-solving, and decision-making; about ways of working, including communication and collaboration; about tools for working, including the capacity to recognize and exploit the potential of new technologies; and, last but not least, about the social and emotional skills that help us live and work together.

That's not an easy agenda for assessment. Our assessments are sample-based and low-stakes, and therefore we can get into much greater depth than with other summative assessments. We are trying to devise assessment tasks in PISA that incorporate transfer and authentic applications, and that provide opportunities for students to demonstrate their understanding through explanation and use of multiple representations.

Important developments in assessment methodologies and technologies enable us to bridge the gap which has traditionally divided educators into two opposing camps between summative and formative assessments. We can now create multi-layered assessment systems that coherently extend from students to schools to states, nations, and the globe.

Andreas Schleicher

Q The world of work and citizenship are both changing fast in our times. What do you think are the most important cognitive competencies our students will need for success in the future?

I hesitate to define those competencies through additional content. In my view, whatever content we teach, it is all about rigor (in terms of cognitive activation and demand), about focus (teaching fewer things with more focus on the depth of conceptual understanding), and about coherence (in terms of building a better understanding of learning progressions). If students have a deep understanding of the fundamental concepts and paradigms underlying mathematics, science, history, and language, and they develop the metacognitive skills to see the world through the different lenses of these paradigms, then they will do much better extrapolating to the many new contexts they will encounter later in life.

The one area that we need to think more about concerns global competencies. Education systems need to prepare students better for living and working in a world that is increasingly interdependent; a world in which most people will come into contact frequently, and will need to collaborate, with people of diverse cultural origins; a world in which their lives will be affected by processes and events, many supported by rapidly evolving communication technologies, that transcend national boundaries and the authority of national jurisdictions to address them. In this world, people will have to negotiate how to adopt ethical and legal frameworks amidst cultural pluralism. They will have to figure out their common humanity and their differences, and they will have to decide how to trust and collaborate across such differences, often bridging space and time through technology.

Q Sometimes overlooked in the headlines about PISA is that OECD also uses student surveys to collect information about student attitudes and mindsets. Can you summarize some of your big picture findings from those surveys?

In PISA, we see that motivation and (even more so) learner ownership – the extent to which students believe that learning is the outcome of effort and support rather than talent – are important predictors of better results. We also know from research that the capacity to achieve goals (e.g., perseverance), to work effectively with others (e.g., sociability), and to manage emotions (e.g., coping) help improve children's lifetime success. But also here I think the global dimension will be of increasing importance.

This is about forming the mind habits to understand global interdependence, and to live with meaning and direction in contexts where global interactions increase exponentially. For example, in a future PISA assessment, students will have to demonstrate the capacity to know, understand, and engage with different perspectives and value systems. They will have to demonstrate that they can deal with dilemmas and the controversies that result from globalization, which have no singular solution, but where awareness of different cultural perspectives on these situations is essential to finding the common ground necessary to solve them.

Q Do student attitudes around things like self-efficacy or motivation correlate less or more significantly with students' high academic performance?

Indeed, these attributes are particularly predictive at the high end of the performance spectrum. In other words, attributes such as self-efficacy and motivation are not less important for the most academically proficient students, but actually more so.

Q Do you think there's a place for such non-cognitive assessment in selective university or secondary school admission, and if so, are you aware of what might be the most promising models of effective assessment of these attributes?

To the extent that readiness for career and life are important considerations, I believe yes. Indeed, I think we need to be careful that "college readiness" does not diverge from readiness for career and life. At the end of the day, college is a means, not an end.

Profiles of Success

When successfully implemented in the independent school admission process, non-cognitive assessment reflects a school's specific educational program and values. The following profiles spotlight a number of SSATB member schools, which are introducing new methods to bolster their traditional, cognitive measures, while connecting to each school's mission.

Castilleja School (CA)

How Is It Working? Developing Tools to Find Out

Castilleja School, a 6-12 girls school next door to Stanford University, has a deep commitment to experiential, global, and community-connected learning. While the school believes these programs effectively cultivate the skills and mindsets necessary for future success, it now wants to know how much students are growing in these programs, which program elements are most effective, and how to use these data to make programmatic decisions and drive continuous improvement.

To do this work in a way that might generate findings of value to other schools, Castilleja Head of School Nanci Kaufman secured a leadership grant from the E.E. Ford Foundation to determine "what does good assessment look like in a 21st century school which takes experiential learning seriously?" Carrying out the research is Castilleja's newly-appointed Director of the Partnership for 21st Century Assessment Karen Strobel, Ph.D. Strobel hails from Stanford's School of Education, where she studied student motivation, growth mindset, and self-efficacy.

Strobel and Castilleja's Awareness Compassion and Engagement (ACE) center's director, Stacey Kertsman, are working together to develop an assessment for the global trips students take in their junior year and for the community engagement opportunities at each grade level. Dr. Strobel explained her goal as bridging academic research with teachers' knowledge and insights to create assessment tools for the classroom.

Knowing how important it was to root her work in her new school's longstanding traditions and cultural norms, Strobel spent much of the first year studying what Castilleja is doing already in terms of curriculum and assessment. Unpacking the mindsets and attitudes the school prizes, she and her team created a framework for their work based on three, core constructs: Initiative, agility, and purpose.

Initiative, as they define it, includes self-directed learning, motivation, and persistence; agility captures creative problem-solving and adaptability; and purpose is the ability to identify problems in the world, one's role in addressing them, and the skills needed, including collaboration, to solve them. All fit neatly, Strobel explained, with the school's mission and motto, "Woman learning, Women Leading."

The next step is to explore how the school's impact and students' growth in each area can be measured. These new assessments will help administrators invest precious resources, support continuous program improvement, and provide better formative feedback to students. In the future, Castilleja's research and assessment tools will be widely distributed. Strobel explains, "to share our work and build a robust assessment learning community, we will also build and maintain a web presence, design an online course to be shared with other educators, oversee a longitudinal study on our graduates, and plan and organize both a think tank for school leaders and a summer institute for faculty."

Admissions won't be left out of this developing project. Castilleja Admissions Director Jill Lee expressed her enthusiasm for incorporating some of these new assessment tools into the admission process.

Lovett School (GA)

The Most Fun Interview in Town

Things have changed at Lovett School (GA), Middle School Dean Maria Madden explains. "We're now a more collaborative school, where students do a lot of group projects and interdisciplinary work." This led to the development of a new middle school application process. The 1:1 interview remains, but is now followed by a group session, in which four or five students work with a teacher to undertake a series of activities.

They begin with an icebreaker conversation, in which the teacher poses a question ("If you could go anywhere in the world, where would you go, and why?"), and the teacher models an answer before asking each student to participate. The groups then build a house of cards, construct a tower of balloons, and navigate silently through a floor maze. Students conclude by reflecting on how the groups worked together, who demonstrated leadership skills, how they solved problems, and the like.

Staff evaluates each student's performance using a rubric organized around five constructs: attention span, impulse control, problem-solving strategies, self-confidence and self-reliance, and cooperation. Madden explains that this list represents the personal attributes they are looking for in students. She warns, though, that it is important for the evaluators to know students of this age very well, so that they can be developmentally (and gender) appropriate in their assessment.

One interesting byproduct of the new process is that after the first few rounds, parents and students were arriving for their interviews enthusiastically, exclaiming, "We've heard this is the most fun of all the interviews around town!"

As files are considered, evaluators find the additional information the group interview provides very useful. Madden says the group work evaluation is rarely considered in isolation; instead, it helps to build out better patterns when interpreting student qualities. When it confirms and deepens what the teacher recommenders and individual interviewers report, that aspect of a student becomes especially important in the admission decision; when it seems to be in conflict, it raises new questions that are useful for discussion.

Overall, Madden explains, "The kids have been very responsive, very participatory; we've been pleasantly surprised. Even the quieter, more reserved students reveal important sides of themselves in this process, which helps us understand them and their thinking better. Parents are also telling us that this process really helps to reveal and display the new and true Lovett."

Galloway School (GA)

Honoring the Individual

"The whole child, not just his/her cognitive ability, is what we are committed to assessing at Galloway," report Polly Williams and Elizabeth King, Galloway School's (GA) former and current admission directors, respectively. They are quick to say this does not dismiss the importance of intellectual ability, but that "traditional measures don't work in isolation to capture the breadth of what kids can do."

Both Williams and King draw upon backgrounds in special needs and dyslexic educational programs in the assessment work they do. They know from experience that often "brilliant kids are not able to demonstrate their brilliance in typical ways." Instead, the mission of their admission operation is to identify the strengths and weaknesses of every child, honoring the unique qualities of each, and to build a balanced class well-suited for their educational program – not just selecting top academic performers.

Because their school has long been committed to what is now called 21st Century learning, they've identified three major assessment domains and have developed assessment tools for each. First are executive functioning abilities, such as time management, organization, and prioritization. For these, they use a self-assessment survey that they have built from various published resources.

Second is perseverance, for which they've recently begun using the Duckworth grit assessment available on her website. In an initial analysis, they've found strong grit scores do correlate well with predicted student success. As Williams and King explain, "We are excited about the use of this tool, because perseverance in the face of challenge is so critical to learning in Galloway's project-based environment."

Third is the interpersonal – specifically the ability to interact and collaborate effectively. To evaluate this for admission to middle and high school, each applicant participates in a group activity – usually building a tower out of various parts – while Galloway educators observe carefully and evaluate with their collaboration rubrics.

The Galloway team is confident and optimistic about their progress on this critically important activity. "We are well on our way to defining which 'soft skills' are most important to us and developing assessments for them. This is doable and worth doing."

Mount Vernon Presbyterian School (GA)

Putting the Mission in Admission

Mount Vernon Presbyterian School (GA) is fast becoming recognized as an innovative K-12 independent school. Head of School Dr. Brett Jacobsen and Director of Admissions Kirsten Beard are thinking about how to improve the match between what is prized and assessed in the school's instructional program and what is considered and valued in admission assessment and selection. As Beard emphasizes, "We have an opportunity through the process to demonstrate more about the school and what we value." She quotes Dr. Jacobsen's desire, "to have the admissions process be another part of our branding, and more importantly, to have everything in alignment."

It's working. Beard explains: "Our applicant pool is growing year to year, even in an oversaturated market, by building system-wide alignment around our Mount Vernon mind." The Mount Vernon Mind establishes six competencies students are expected to develop: Solution Seeker, Ethical Decision Maker, Communicator, Creative Thinker, Innovator, and Collaborator.

What is Mount Vernon doing to assess the MV Mind in applicants? First, they are helping to revising their consortium teacher recommendation forms to add questions that hint more at non-academic skills and articulate to recommending teachers the attributes Mount Vernon values.

Second, Mount Vernon is revising its in-house assessments of applicants to include performance tasks. Beard explains, "Because demonstrations of learning at Mount Vernon are much more than answering questions on paper, we sought to innovate with our Student Questionnaire Form. Recently (without prompting), an applicant submitted a movie he created of himself that included his answers to each of the questions from the form. We would like to include this kind of open-ended opportunity; the submissions could look more like portfolio pieces and allow prospective students to experience what it's like to participate in such a task."

Third, Mount Vernon embeds questions illuminating students' mindsets into the application and interview processes. Design thinking is emphasized at MVPS, and applicants are asked about problems they have noticed in their lives and the world today, solutions they can identify to address them, and what they can do personally. These questions both help to identify the right students and communicate the importance of inquiry, innovation, and impact at Mount Vernon.

University Child Development School (UCDS)

Crickets Chirp and Sparks Fly

Authentic assessment has long been engrained in the 'DNA' of the University Child Development School (UCDS) in Seattle. Creator of the Reflective Thinking Profile, this PK-5 school fully lives its mission of creating a culture of inquiry, cultivating skillful thinkers and collaborators who will "ignite positive change in their communities." UCDS extends this commitment to its admission process.

The UCDS admission process is balanced between traditional standardized testing and other admission tools. Admission Director Tami Milles-Atterberry describes Pre-K and Kindergarten visit days as tools designed to "know" each child, allowing him or her to "enter in all different ways, to shine in the ways that are most natural or important to each of them." Choices are laid out to encourage exploration and mirror the UCDS project-based classroom. Children choose activities without prompting, as observers watch what interests them. Will the student create something at the art table or assemble a puzzle?

No matter where a child's inquiry begins, the most captivating moment of these visits is the construction of an insect habitat (a cricket this year) that will accompany each visitor upon leaving. The process of building bug habitats and naming their new friends provides a wealth of insights. Observers note what this project sparks in each of these young architects. Are they eager, invested, creative, curious, patient? Can they follow directions, self-regulate, observe, connect? Do they collaborate, ask questions, seek information, reflect? Will they persevere, share ideas, listen, take risks? Is there excitement around learning?

Milles-Atterberry stresses the fact that these visits are an all-hands-on-deck activity, with faculty and administrators playing a role. No one reads applicant files prior to the visit, so that the debrief discussion can focus exclusively on the child's experience that day. Milles-Atterberry emphasizes that, after this experience, they really know a child and can search for consistencies among all the input.

The UCDS admission process is impressive in the graceful in the way it comes full circle to connect prospective students with UCDS' mission of reflective questioning. UCDS inspires its visitors to feel "they should always be working on something." In addition to departing with crickets and habitats, the children are asked to consider an important question: where will I release my cricket into the natural world?

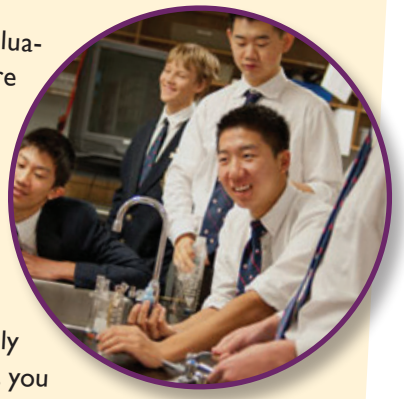
St. George's School (BC)

Changing Admission for a Changing School

St. George's School (BC) may not be as old as many East Coast schools, but it has grown to enroll 1,100 boys in grades 1-12. St. George's prides itself on being sophisticated about the neuroscience of boys and about the best pedagogical practices for educating them. The school's six core values – empathy, humility, integrity, respect, responsibility, and resilience – are what the faculty wants the boys to demonstrate and manifest as they walk across the stage at graduation.

When Director of Admission Gordon Allan arrived a few years ago, he sought to embed those values in the admission process. "It is critical for every school," he asserts, "to ask 'to what extent is the process of selection tied to the mission and values of the school?'" There was much happening in the educational program of the school at the time, with a head proclaiming a commitment to 21st century learning and a faculty moving away from teacher-centered education and toward student- and group-centered learning, where groups of students research and analyze problems, then present and explain their answers. "The importance of team-based collaborative learning has become huge, and universities are saying they are looking for these same skills and experiences."

The challenge is that the traditional student interview results in an experience for the applicant that is all about "Me, Myself, and I." So, Allan added a group interview, in which a pair of challenging tasks is presented to a group of applicants. An example task might be "Let's say you've been hired by Apple to go to a senior citizen home where the average age is 75, and your group must come up with a plan to make a compelling case to them for purchasing Apple products." Students are observed carefully to determine who's showing leadership and who's being bossy; who's lagging, who's thinking, who's supporting; who's being a class clown; and who's being an enthusiastic ideas type. The presentations each group makes to the other are important too, and a rubric is used to capture all the information being collected.



On the elementary side of the process, St. George's is using an EQ evaluation alongside their traditional IQ assessment in an attempt to form a more well-balanced class of students. St. George's also asks primary applicants to do a simulated group play experience and watches them to see if they demonstrate the school's core values.

St. George's both is and isn't the same school it has always been, and it is important for admission to take visible steps to convey the school's evolution. "We're sending a strong message to the community about our school values through these changes," Allan says. "We're throwing a bit of a wrench in family expectations, because we're saying that, even if you do well on an academic test, you may be missing other critical social and emotional areas which need to be shown."

What follows this change in admission assessment is a change in the composition and feel of the newly-selected classes. Allan reports: "We find that our new classes are much more dynamic and engaged, and possess a richer and more diverse personality. We have more creative thinkers, more leadership potential emerging, and more quirky students who are challenging norms." These changes are good, but not always easy. Teachers are reporting a wider range of academic ability in the more recently admitted classes, and a much broader array of skill levels. "This demands that teachers provide more differentiated instruction, but that's OK too. Differentiated learning is where we've been headed as a school already."

Non-Cognitive Skills and the Changing Workplace

The work of the Think Tank is meant to serve the assessment needs of the independent school community, both now and in the future. The challenge of selecting a student population that embodies the educational and cultural missions of our schools is mirrored by the challenges companies and human resource departments face each day as they search for and hire the right employees to progress and grow the global economy.

As LEGO Education North America President Stephan Turnipseed opined, "Sixty-five percent of today's children will end up at jobs that haven't been invented yet…So how do you prepare kids for jobs that haven't even been invented yet? No matter the area of focus, every job will require blended abilities of not just hands-on skills, but communication and other collaborative skills as well, enabling employees to work effectively with colleagues halfway across the world."[1]

In this section, we highlight the viewpoints of five influential individuals with unique perspectives on the attributes the workers of tomorrow will need, and how we can foster them in today's students.

[1]U.S. News & World Report, OpEd, 10/8/13. Online. http://www.usnews.com/news/stem-solutions/articles/2013/10/08/why-your-student-failing-is-good-for-the-future-economy.

Amy M. Wilkinson

Amy M. Wilkinson *is a Senior Fellow at Harvard's Kennedy School of Government and a Scholar at the Woodrow Wilson Center. She is the author of* The Creator's Code: The Six Essential Skills of Extraordinary Entrepreneurs.

Q What is the focus of your research?

For the past five years, I've conducted research with high-scale entrepreneurs, defined as those who have founded companies with revenues over $100 million, or social entrepreneurs who've launched organizations supporting over 100,000 people. I've conducted over 200 interviews and collected more than 9000 pages of transcripts; this is the largest such study to date of high-scale entrepreneurs.

Q SSATB serves schools that are preparing students for success and leadership in tomorrow's economy. How will the workplace change in the coming decades?

Given the rapid pace of change, if you are a student or a professional today, it is hard to anticipate what work will look like in five years, or even in one year. Accordingly, it matters less what you know and much more what you can do with what you know – how you can integrate new learning and apply insight to new situations. The future workplace will reward those who are open to change, are intellectually curious, and are ready to build on each other's ideas through collaborative give and take.

Q What do you think are the most important personal attributes and aptitudes required for success in tomorrow's economy?

First is continuous learning – never thinking you're finished. It can be an uncomfortable place to live, but if there is one thing I've learned from all my interviews, becoming a successful entrepreneur is about getting comfortable with being uncomfortable. Second is curiosity – always asking questions, figuring out how things fit together, challenging the status quo, and not accepting "no" as an answer. Third is relentless optimism (or grit). Today's challenges can even be hard to define, and they require perseverance. You can't be dissuaded by obstacles or failures, but are willing to get out there and get dirty doing the difficult things. Fourth is the ability to work with people who have very different backgrounds and perspectives from your own. When you are pioneering new frontiers, do it with a diverse array of allies who work well together.

Q How can schools be more effective in preparing K-12 students for success in the changing workforce?

Usually, students are evaluated only for individual performance on a paper or a test. But we need to ask how we can rewire schools to have students regularly working together in diverse teams. In the past, professionals could "win" or "succeed" working on their own. Now the way to excel is by working effectively with others, with people who hold wildly divergent points of view – and this is not (yet) what we teach in schools. We need to be starting more team-based activities, such as FIRST robotics created by Dean Kamen, one of my research subjects. As he said, we need to invent the inventors. We need teams collaborating and creating constantly, and we need to grade and evaluate them as a team and for their teamwork.

Students also need opportunities to do more work in the real world. Math students could be partnering with researchers in big data, for instance, to see firsthand how math becomes real in the world and can be used to solve healthcare challenges, energy concerns, or retail marketing questions, for example.

Finally, we should help students find the connections between various disciplines, because often, intersections reveal where the action is. One example is behavioral economics, a field that barely existed a few years ago and which is now bringing together disciplines of economics, psychology, sociology, and statistics. Another is technology. Technology used to be mostly about infrastructure, demanding primarily engineering skills. Today, however, technology companies increasingly focus on the consumer and bring together communications, psychology, technology, and so much more. So many previously discrete skill areas are combining, and our students need to be ready to integrate skill sets to do the same.

Q How do you think colleges and business schools should be assessing their applicants to identify those with the most aptitude for entrepreneurship?

It is so important to rethink how we are assessing students for admission. We need to be asking a different set of questions of every applicant: What have you built? What have you brought into the world through your imagination and relentless optimism? What is missing in the world that needs to be addressed? When have you failed and what did you learn? How do you learn with others? What matters to you most – and why? These types of questions are so much more important than asking about any narrow pursuit.

Cory Ondrejka

Cory Ondrejka *is Vice President of Engineering for Facebook*

Q What does it mean to be the Vice President of Engineering at Facebook?

I run a mix of engineering, product, and design – focusing on how people connect with Facebook. I previously ran mobile engineering during the Facebook mobile transition.

Q What are the greatest challenges for your team, and what is the working style of your team?

Looking back on the work we did to transform our mobile products, we faced a lot of challenges, both external and internal. Externally, a rapidly growing number of people wanted to use Facebook on their mobile devices, and they were waiting for us to develop a product worthy of their attention. Internally, we had to build out new expertise and capability very quickly, simultaneously managing strong top-down direction and generating bottom-up capability. Our team needed to possess and develop the skills to execute these changes. We had many distributed teams, and it was critical for them to collaborate, to be able to ask for help, and to be able to boast appropriately to communicate their successes to others.

Q What qualities are required to be successful on your team? In other words, which cognitive and non-cognitive qualities do you prioritize in your hiring process?

As you think about building a product, something people will really rely upon, there is a high priority for expertise in your chosen profession. At Facebook, we need people capable of very high-quality coding who have the ability to decompose a problem into the right parts. Additionally, employees have to possess high empathy for the product users, and really be able to understand the mindset of users. Communication skills are critical, because employees have to communicate among multiple distributed teams, help people develop a shared vision, generate a shared and common narrative of the work we're doing, and inspire excitement and passion about the work. Problem solving and pattern recognition are essential. Finally, team members must be able to do all these things in collaboration with other very smart people.

Q When hiring, how do you assess your candidates for those important cognitive and non-cognitive attributes?

We tend to focus on the following: Do we think the candidate would be effective here at Facebook? Do they have the necessary raw training and expertise in their field? Do they have the relevant expertise with the technical elements? Are they able to talk through the steps of tackling a large-scale problem? We also ask: What has the applicant done like this in the past, and how would they use past experience and larger expertise to address a complex problem?

Really, we are looking for three things: People who are fun and effective to work with and who have the necessary interpersonal skills; people with the required intellectual horsepower; and people able to apply and communicate that knowledge.

Q What do you think secondary schools need to be doing to prepare students to be successful working at places like Facebook?

It's essential that they teach students how to collaborate, to present and communicate ideas, and to think critically about problems. This all has to be built on solid foundations. It is hard to be a product developer unless you have the relevant coding skills, which depend on strong math and science foundations.

Once these foundational pieces are established, what is important is the ability to apply these skills in a collaborative setting and to apply knowledge in very broad ways. I think starting to practice these skills early is very important, but it is not easy. It is hard when teams are diverse, and some students are not pulling their weight. Educators have to be up to the challenge of closely monitoring and assessing the work of student teams and to help the students work through these challenges and learn the applicable lessons of teamwork and collaboration.

Yong Zhao

Yong Zhao *is Presidential Chair and Director of the Institute for Global and Online Education in the College of Education, University of Oregon. He is the author of Catching Up or Leading the Way: American Education in the Age of Globalization and the new World Class Learners: Educating Creative and Entrepreneurial Students.*

Q Can you describe briefly your areas of research and what you are working on for your next book?

Having been born and educated in China, my background has brought me to my research, which is focused on trying to understand and compare educational practices and policies in different countries. My next book is about China, which is often viewed as the best system because of its test scores. What those high scores cannot show is that Chinese education is really just the best sausage-making machine; it homogenizes student talents and turns out great test-takers at the great cost of developing and supporting students' creativity, diversity of talents, and entrepreneurship.

Q What do you think are (and will be) the most important cognitive competencies and non-cognitive skills required for professional success in the future?

I think it is so hard to separate cognitive and non-cognitive; I'm now using the terms academic and non-academic skills. Academic skills are always a combination of both cognitive and non-cognitive. What we really need to be is individually great – great at what we are good at, great at what we are passionate about. I think the key is learning how you can become great in your own way. You have to understand how to use failure as learning, how to be resilient, and how to maintain a growth mindset.

On the PISA, for example, Finnish students are very good at science, but they report they are not very interested in science; Asian students are great in math but are not confident in that subject. For optimal career success interest, confidence, and ability must all come together.

Q You are a critic of several widely used tests used to assess student cognition. How do you think schools should best assess student cognitive competencies and important non-cognitive attributes?

Any assessment needs to be personalized, so that students are not assessed against external standards, but only against themselves and their own growth. The questions we should be asking of our students are: Are they pursuing greatness? Are they doing something truly exceptional? Do they have intrinsic motivation? Are they motivated to pursue this out of their own joy and intrinsic desire and not just for the material rewards? Are they deeply engaged and pushing themselves with maximum effort?

Q Can you give specific examples and tactics for this kind of assessment?

I write about this in my book, *World Class Learners*. I call it "product-oriented learning." You assess their growth by observing their improvement, like in photography from the first picture they take to the last – how much has it improved in lighting, shading, composition, etc. Or look at their essays – how much do they improve over time? Portfolio-based assessment is a great way to do this, and design thinking plays a role as well – how do they approach a problem, and through multiple iterations from the beginning product, design better and better solutions?

Q Are you familiar with the work of Robert Sternberg, and do you agree with him that there's an important place in selective university or private high school admission for non-cognitive and creativity assessment?

I am familiar with what Sternberg did at Tufts, and I do think his ideas are becoming more and more prevalent in universities across the U.S. The only thing that a "perfect" score on the SAT or AP tells you about a student is that he or she complies well with the expectations of others (i.e. what others have prescribed as the good). What we need more of are individuals who do not comply with the expectations of others, but who set their own expectations and demonstrate their own individual excellence. You can see this in how they hire at Google. They are interested in what you've done in your own way to demonstrate your uniqueness and your exceptional talents – not in what you've done against external standards.

Exploiting the Big Data Mine

Dr. Vivienne Ming *is Executive Director of Socos, an educational technology and data mining company based in San Francisco, and Chief Scientist of Gild, which helps companies hire skilled developers by ensuring that candidates stand out on their proven abilities, not just their resumes. She earned her Ph.D. in psychology and computational neuroscience from Carnegie Mellon University.*

Dr. Norma Ming *is Director of Learning Design for Socos; she is a learning scientist and educational technology thought leader who works at the intersection of research and development, policy, and practice. She earned a Ph.D. in cognitive psychology in the Program for Interdisciplinary Educational Research at Carnegie Mellon University.*

Q What motivated you to bring your work in technology and data mining to education?

NM: We were walking our newborn son one day and began discussing how our respective research interests could merge with our ambitions to improve education. High-quality assessment is a big challenge for educators, and it usually is far too removed from what teachers do and use on a daily basis. The testing is intrusive and decontextualized from the learning environment, while the feedback is delayed and insufficiently specific. Good teachers are constantly monitoring children's progress, but they need better information and a better way to combine and aggregate the data in an analytic framework.

This is what Socos seeks to do. We are an edtech company that delivers powerful machine learning technology via a friendly interface for educators. Vivienne is the data scientist, who is building the algorithms to understand the brain and its cognitive structures; I am the learning scientist, who makes this available for teachers in a user-friendly way.

Q If you could pick only one, what is the single most important non-cognitive quality or attribute necessary for success?

NM: The most important trait I look for is the ability to respond productively to feedback, since it's difficult, yet so important for people to be able to use feedback well to keep improving.

VM: The current literature on grit certainly is compelling. I attended a Gates Foundation event at MIT on grit, where all kinds of experts came together to discuss defining grit, researching its effects, and assessing it. I found it disheartening, though, that nobody was talking very much about developing and educating for it.

When you dig deeper into the research on things like self-control, you find that it is very sensitive to the conditions and context. For instance, children are much more likely to wait for the second marshmallow in the famous delayed gratification test if the environments and adults in their lives are trustworthy. Grit is similar: people will work harder and longer for something if they believe that their discipline will pay off, and that belief is often dependent on other life experiences.

Gild, the company where I am Chief Scientist, works to match candidates to jobs and the particular skills being sought in the tech sector, so we're looking at this topic all the time. Google, for example, has been changing what they look for and how they evaluate candidates. They discontinued the use of brain teasers, because they are too easy to study and prepare for, and that advantaged those who were trying to "win" the interview. Google is now interested in learning about a candidate's endogenous (intrinsic rather than extrinsic) motivation – people doing what they're doing because they love it, not for the money, advancement, or social esteem.

Intellectual humility is important too. You have to be able to work with others, learn from others, be learning all the time – and that takes a certain humility to make it work.

But again, the context and environment of the work is as important as the individual talents, and you have to work to make the match. My goal at Gild is not just to say, "Here is the right person for your needs." I'd much rather say, "Here are the ten candidates who offer the most potential AND here are the ten things the company needs to do—the interventions, coaching, environmental supports—to bring out their potential and maximize their value." We need to be working toward a much more dynamic recommendation system for employee placement. This applies to school admissions selection as well, where we say, "Here's what we know about the student and here's the environment in which he or she will flourish."

Q What are your thoughts on the state of educational assessment today?

NM: My biggest question right at the start is, "Are we collecting the right data?" I'm concerned about the use of self-reports. Self-reports can work for low stakes measurement, but are very problematic for high stakes situations. For high stakes, you have to have behavioral measures, assessing what people do in the most authentic contexts you can construct.

It is a divide that haunts all of educational assessment: this canyon between low stakes, formative assessment and high stakes, summative assessment. It is a constant problem. I can say as a parent, I want much more information about my child's progress, but I don't want to receive the data in a way that makes me feel nervous, anxious, or competitive. Throughout the entire process, the data should be collected, presented, and used to provide support. We don't want people to fear data. Accurate information is critical for improvement, but only if people are able to use that information.

We need more educational data about the real things children do, all the time, in their learning. We need much more balanced data collection, composed of self-report, reports by others, and behavioral data. We also need to use these data in more meaningful ways, not to judge, reward, or punish, but to help children become more accurate self-assessors of their own progress. Once we have collected more and better behavioral data, of what children actually do as they learn, we can then match up self-assessments with behavioral markers and see how well the self-reports do predict behavior.

Drs. Norma Ming and Vivienne Ming

Q Can you share with us where you are headed with using technology for improving assessment?

VM: As a neuroscientist, I'm very attached to the field of what's called "natural scene analysis." From years of research, we know that brain functions are highly contextual to the environment, and can be highly distorted by being studied in the lab. If you want to really understand students, you have to understand them in a natural environment, not in artificial testing environments.

For more on the fascinating and trailblazing work of Socos and the Drs. Ming, see their keynote speech for SXSWedu, which can be found on video here: http://sxswedu.com/news/2014/sxswedu-2014-video-highlights-keeping-promise-educational-technology

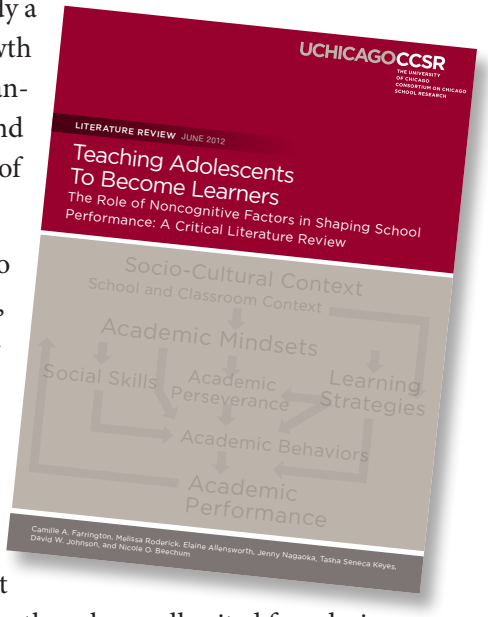
We want to collect and capture the data of those natural scenes—where kids are just doing the everyday work of school and learning and playing—and determine from that what they are learning. We want to wire up classrooms in a simple, subtle way—a little microphone on every student and teacher, for instance— and as everybody talks to each other all day, the data are gathered and analyzed. At the end of the day, the teacher can log in to a dashboard and get a report of what happened for each child in his or her learning that day.

To achieve this vision, the audio is transcribed automatically to a digital text and before too long we have a LOT of data in the computer. (To generate the predictive patterns, you need data from thousands, or even better tens of thousands, of students.) We call these "unstructured data," because they are collected without any prior judgment of what we are seeking. Next, we "mine" the text with the tools of Big Data. We begin totally naïve, not looking for our own preconceptions, but overlay the student outcomes, e.g. their grades at the end of a term, atop the data we've collected on their interactions and language. Then we scan, analyze, and identify: what predicts successful outcomes? What combination of individual words, of vocabulary and syntax, and of strings of words during the term is significantly correlated with higher grades at the end?

This is how we seek to discover what kind of daily interactions and regular language usages predict academic success, and, from this analysis, we can design a system which can deliver a daily report to a teacher about whether and how the child is progressing. This is the type of assessment we are working toward.

Academic Mindsets: *(continued from page 5)*

survey about how they think about school, and study a module about the brain and the science of the growth mindset. Follow-up studies show a lasting and meaningful effect on their growth mindset program and on similar interventions targeting students' senses of belonging, self-efficacy, and purpose.



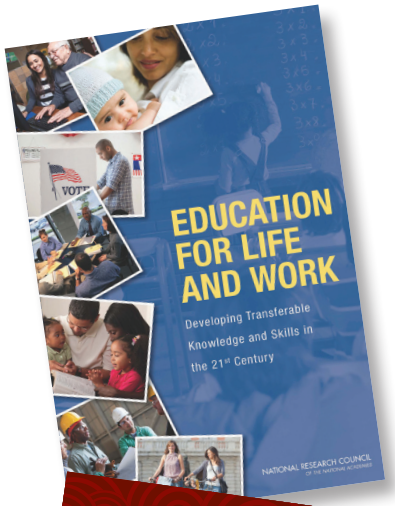
Romero explained that, like Farrington's Chicago program, PERTS also primarily uses self-reports, and Romero is similarly wary about the use of academic mindsets surveys for admission selection: What sense does it make to limit a student's opportunity for enrollment because of a quality which can be influenced and improved easily in a matter of a few hours? The very thing that makes these four "academic mindsets" so ideal for assessment and intervention – their malleability – is what makes them less well suited for admission assessment.

However, admission work doesn't come to a full stop once students have been selected; indeed, as enrollment managers, directors' responsibilities include student re-enrollment as well. If academic mindsets predict school success, it might well behoove us to use the model for better supporting students after admission and enhancing students' long-term success. Romero explained that she believes academic mindset surveys could be administered, in an entirely low-stakes manner, to newly enrolled students, and orientation programs could use the data to implement the appropriate support for new students. For example, if the survey shows incoming students lacking a sense of belonging, then the school would build a program cultivating belonging. (For more information on model programs, see the Farrington report, *Teaching Adolescents to Become Learners.*)

Carissa Romero, Ph.D.

Dr. Farrington also sees opportunities for schools to better support academic mindsets for new students. As she explained, "There is clear evidence that transitions into new school environments (or into new classes at the beginning of a term) are critical time periods, because students are forming their impressions of the place and of their own likelihood of success and belonging within that place. Activities that build relationships among new students are good, but so are activities that convey to individual students that their own preferences and interests will be acknowledged and respected. It helps a lot when kids feel like an adult at the school cares to get to know them and will be their champion."

Recommended Reading



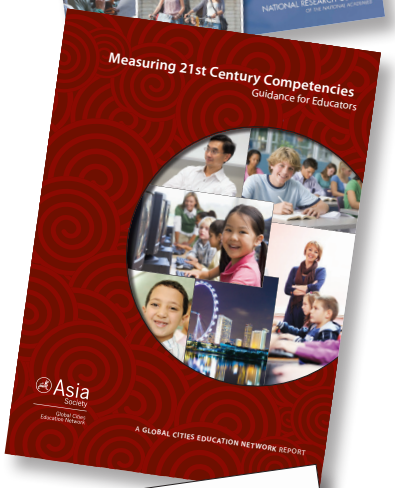
Across the non-cognitive landscape, several valuable reports have been published that effectively capture key research findings about the importance of non-cognitive attributes and inform readers on effective practices for teaching and assessing them in schools.

Education for Life and Work

2012: The National Research Council

One of this report's central findings is that there are three clusters or domains into which the critical competencies required for life and work can be divided – the cognitive, the interpersonal, and the intrapersonal. The report names the kind of teaching and learning which best educates students for life and work as "deeper learning," and provides a fascinating overview of the evidence-based strategies which constitute this deeper learning. These strategies, and examples of them, can be found in a handy, succinct and free, document entitled *Education for Life and Work: Guide for Practitioners*.

Available for free PDF download. (http://www.nap.edu/catalog.php?record_id=13398)



Measuring 21st Century Competencies: Guidance for Educators

November, 2013: The Asia Society (Global Cities Education Network), commissioned from the Rand Corporation

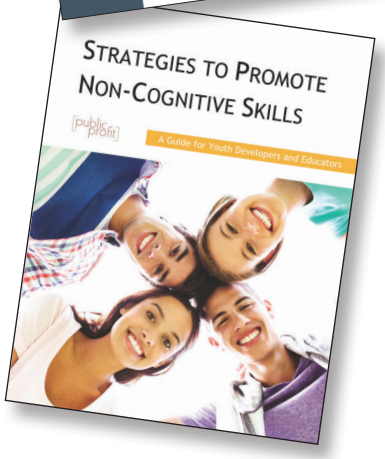
The report describes the non-cognitive traits that should be assessed in each of the three NRC clusters: Cognitive, Interpersonal, and Intrapersonal. For each of the three 21st century competency domains, they outline what they believe are the most important.

This is a free, downloadable document. (http://asiasociety.org/files/gcen-measuring21cskills.pdf)

The Strive Together Network recently published a tremendous set of resources on non-cognitive assessment. Any school or educator wishing to implement non-cognitive assessment, whether in admissions or overall program, will find this compendium highly useful.

In Volume I, they identify five social and emotional competencies meeting their specified criteria: Academic Self Efficacy, Growth Mindset or Mastery Orientation, Grit or Perseverance, Emotional Competence, and Self-Regulated Learning and Study Skills.

In Volume II, they provide readers with a series of tables organized both by competencies and age group. Volume III goes a step further, actually providing the measurement tools themselves when possible. Online and freely available. (http://strivetogether.org/resources/reports)



Strategies to Promote Non-Cognitive Skills: A Guide for Youth and Developers

February 2014: Public Profit

The report declares that "non-cognitive skills—the strategies, attitudes, and behaviors youth use inside and outside the classroom—are critical to young people's success in school and the workplace." The succinct document directs readers to and organizes 16 different strategies to support the development of these non-cognitive skills.

(http://www.publicprofit.net/Services/Training/NonCognitiveSkillsGuide/)

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Featured Speaker:

AMY WILKINSON

Senior Fellow, John F. Kennedy School of Government; Global Fellow, Woodrow Wilson International Center for Scholars

Friday, September 19 • 1:30 – 3:00 pm

CHRIS BIGENHO

Director of Instructional Technology, Greenhill School, TX

Rubrics for Assessment and Selection at the Elementary Level

Friday, September 19
10:30 – 11:45 am

NANCY HAYES

Director of Enrollment Management, New Canaan Country School, CT

JONATHAN MARTIN

Principal, JonathanEMartin Ed. Services

Reimagining Group Assessments

Friday, September 19
3:15 – 4:30 pm

MARJORIE MITCHELL

Director of Admission and Financial Aid, The Westminster Schools, GA

Interactive Elementary Visits

Saturday, September 20
9:00 – 10:15 am