

*Creating Opportunities for Change: Non-Cognitive Skills Instruction in the Classroom*

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**Abstract**

To address the demands of accountability mandates such as data-driven, evidence based instruction and the need for 21st century skills, educators have revisited practice looking for ways to nurture student motivation, increase time on task and promote learner autonomy. Classrooms have been digitized, material made accessible and initiatives implemented to create positive, school-wide environments. Yet, despite such changes, a number of educational challenges remain, including lower than expected graduation rates, an increase in mental, emotional and behavioural disorders (MEB) and less students pursuing and completing higher education. Unfortunately, such changes fail to address the fact that students often lack the competencies to effect lasting, positive change. Current research has demonstrated that competencies such as grit, resilience and tenacity -- referred to as non-cognitive factors -- have significant and lasting impact not only on students' academic outcomes but also across multiple domains (Durlak et al., 2011; Farrington, et al., 2012). These competencies have also proven to be effective preventive measures mediating risk factors for a number of MEBs including depression, substance abuse, aggressive behaviour and school withdrawal (Beets et al., 2009). Moreover, non-cognitive skills are far better predictors of student success over and above IQ, student GPA and academic test scores (Dweck et al., 2014). As more and more research points to the importance of non-cognitive skills instruction, educators are coming to understand that these competencies form the foundation from which students thrive.

Keywords: Non-cognitive skills, social emotional learning, achievement gap, developmental psychology, teacher practice

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## Introduction

*Every door is barred with examinations and opens but to the golden key of the crammer ... not what is of most real use and importance in life, but what “pays best” in examination, is the test of desirability.* - Grant Allen

21<sup>st</sup> century education is characterized by an emphasis on *educational equity*. Ensuring that every student is afforded the same *quality* of education and that schools function as effective equalizers of opportunity have guided much of current educational reform (Confrey, 2008, p. 35). Policy makers have argued for more exacting academic demands including more rigorous criteria for high school graduation, increased student participation in advanced coursework, and higher standards within course content. To achieve this goal, they have instituted test-based accountability measures holding schools responsible for student performance (Boykin & Noguera, 2011, p. viii). By engaging in a systematic pattern of coursework, raising expectations to spur student performance and emphasizing mastery of content knowledge, it is believed that students will become *college* and *career ready*, having developed the cognitive abilities required to succeed in post-secondary education and that set the foundation for ongoing success as they enter the workforce.

This focus on cognitive ability has been the cornerstone of post-industrial education. Modern societies draw on this belief and rely on standardized achievement tests to sort individuals and to assess and monitor the performance of schools, districts and even nations. However, despite over a decade of such measures, many students still struggle with schooling and gaps in academic performance persist<sup>1</sup> (Boykin & Noguera, 2011, p. 5; Confrey, 2008, pp. 36-38; Kautz, Heckman, Diris, ter Weel, & Borghans, 2014, p. 9).

These approaches and much of conventional schooling rely on the ability of tests to accurately reflect cognitive ability or “intelligence”. Over the past century, researchers have revised their definitions of “intelligence” and subsequently refined measures of cognitive ability. It is now commonly accepted that intelligence has a number of facets. Psychologists generally distinguish between *fluid intelligence* (how quickly people learn, often measured using IQ tests), and *crystallized intelligence* (the amount of acquired knowledge, reflected in achievement tests). Unfortunately, such distinctions often fail to make their way into practice. Despite the fact that these tests measure different facets of intelligence, many use IQ tests, standardized achievement tests and even grades interchangeably “as mutual surrogates ... measuring the same thing, even in the face of obvious differences” (Duckworth, Quinn, & Tsukayama, 2012, p. 440; Kautz et al., 2014, p. 13).

This usage of test scores to measure student ability is problematic, especially when such measures are considered to be reliable indicators of learner ability. One often replicated study, demonstrates how incentives can significantly increase IQ scores

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<sup>1</sup> Though many educators are familiar with gaps defined along socio-economic (SES) lines, academic performance gaps span multiple dimensions. Gaps exist between first-order learning outcomes (traditional education consisting of “basic” knowledge and academic skills) and higher-order learning outcomes (referred to as “knowledge transfer skills”, the generation of new knowledge by applying accumulated knowledge and skills to real-world situations). A third dimension encompasses the global academic achievement gaps and the existence of a skilled workforce (Boykin & Noguera, 2011, p.5).

particularly among low-IQ individuals. Using M&M candy as incentives for correct answers, participants raised their test scores by an average of 12 IQ points (Edlund, 1972). Other studies have examined the predictive factor of IQ, concluding that IQ does not sufficiently account for variations in life outcomes. Heckman (2008) looked at such outcomes including divorce rates, employability and earnings between high school graduates, dropouts and individuals passing the General Educational Development (GED) program<sup>2</sup>. Accounting for cognitive ability (IQ), GED recipients were no better than high school dropouts with shorter length of employment, lower earnings, poorer health and higher rates of divorce and incarceration (Kautz et al., 2014, pp. 25-26). A focus on cognitive ability as the basis for *college* and *career readiness* fails to account for other variables that allow students “to learn as much as he or she is capable of learning” (Wayman, Conoly, Gasko, & Stringfield, p. 172). A more holistic approach to education is required.

Educators who have spent time in the classroom intrinsically understand this and tend to prefer the measurement of student ability via course grades or class rank. Course grades not only measure student test performance, but also reflect student behaviour, affect and attitude, which are fundamental for academic, professional and social success (Farrington, et al., 2012, p. 3). As Duckworth and colleagues (2012) point out, standardized achievement tests fail to capture the qualities required to “cross the finish line” and graduate from college. Instead, direct teacher observations of student behaviour, represented in grades, measure a student’s ability to “get it done” in a much more powerful way (p. 13).

These particular “patterns of thought, feelings and behaviour” (Bourghans, Duckworth, Heckman, & ter Weel, 2008, p. 974) contribute to the education process and are often not represented in traditional academic measures, particularly not in standardized academic achievement tests (Garcia, 2014, p. 6). As Heckman (2007) cautions, an overemphasis on “smarts” undermines the effects of human capital interventions because it is based on a misconception of learner development and ignores the importance of skills known to determine successful life outcomes.

These “skills”, sometimes referred to as “soft skills” and more commonly as “non-cognitive skills”, include problem-solving, critical thinking, emotional health, interpersonal skills, work ethic, persistence, creativity, self-control and community responsibility, which are closely tied to the *psychological personality* of the student. A number of studies indicate that not only are they crucial to academic performance, but also are better than IQ or standardized achievement tests at predicting academic and life outcomes (Bourghans et al., 2008; Duckworth et al., 2012; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Farrington, et al., 2012; Garcia, 2014; Kautz et al., 2014). Though most schools and teachers are aware and concerned about the development of these skills, many feel that instruction of these skills is not feasible and difficult to justify given the competing demands for resources and difficulty predicting clear, discernable benefits to students’ academic progress (Jones & Bouffard, 2012, p. 12; Zins, Bloodworth, Weissberg, & Walberg, 2004, p. 193).

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<sup>2</sup> Passing the GED (achievement test) confers a certification of high school equivalence to American students

However, the world has become more complex, technical, multifaceted and competitive. Technological advances have enabled media to gain access into the most private spheres of our lives. Adolescents and young adults are bombarded with messages and models communicating quick, shortsighted decision-making, impulsive and violent behavior, as well as emotional dis-regulation (Elias, Parker, Kash, Weissberg, & O'Brien, 2008, p. 208). In the face of these influences, it is imperative students have the chances and support required to develop and practice the skills to “generate and coordinate flexible, adaptive responses to demands and to generate and capitalize on opportunities in the environment”. (Garcia, 2014, p. 3; Kautz et al., 2014, p. 10; Schechtman, DeBarger, Dornsife, Rosier, & Yarnall, 2013, p. 75; Durlak et al., 2011, p. 406).

Unfortunately, the weakening of family and community support systems, institutions traditionally responsible for such informal education, has produced a deficiency in the socialization and development of learners that undermines the capability of students to “fulfill their personal and professional potentials” (Garcia, 2014).

### **A Framework for Understanding Non-Cognitive Skills Instruction**

*Anyone can become angry – that is easy ... but to be angry with the right person, to the right degree, at the right time, for the right purpose, and in the right way – that is not easy.*  
- Aristotle, *Nicomachean Ethics*

The idea of developing non-cognitive skills is not new. Since the time of Aristotle, philosophers, sociologists, psychologists and educators have recognized the importance of cultivating social and emotional competencies in learners. The American educational reformer John Dewey (1933) was one of the first to propose the inclusion of empathy and interpersonal skills in the formal educational environment. The success of works such as Howard Gardner’s *Multiple Intelligences* (1993) and Daniel Goleman’s *Emotional Intelligence* (1995), renewed interest in students’ social and emotional development (Zins & Elias, 2006, p. 1). Practitioners and researchers, recognizing that IQ and test scores were unable to account for the varied results of individuals across both school and life outcomes, made concerted efforts to identify “the factors at play ... when people of high IQ flounder and those of modest IQ do surprisingly well” (Goleman, 2009, p. 9). These “specific cognitive behavioral and affective skills needed to effectively enact key roles in a given context” (Elias et al., 2008, p. 249) figure prominently in 21<sup>st</sup> century education, spanning cognitive, intrapersonal and interpersonal domains, and are considered essential for individuals to achieve their full potential as adults.

## 21ST CENTURY SKILLS AND COMPETENCIES

COGNITIVE COMPETENCIES	INTRAPERSONAL COMPETENCIES	INTERPERSONAL COMPETENCIES
<p><b>COGNITIVE PROCESSES &amp; STRATEGIES</b> Critical thinking, problem solving, analysis, reason/argumentation, interpretation, decision making, adaptive learning, executive function</p>	<p><b>INTELLECTUAL OPENNESS</b> Flexibility, adaptability, artistic &amp; cultural appreciation, personal &amp; social responsibility, appreciation for diversity, continuous learning, intellectual interest &amp; curiosity</p>	<p><b>POSITIVE CORE SELF-EVALUATION</b> Self-monitoring, self-evaluation, physical and psychological health</p>
<p><b>KNOWLEDGE</b> Information literacy, technology literacy, oral &amp; written communication, active listening</p>	<p><b>WORK ETHIC / CONSCIENTIOUSNESS</b> Initiative, self-direction, responsibility, perseverance, productivity, grit, self-regulation, metacognitive skills</p>	<p><b>TEAMWORK &amp; COLLABORATION</b> Communication, collaboration, cooperation, coordination, interpersonal skills, empathy/perspective taking, trust, service orientation, conflict resolution, negotiation</p>
<p><b>CREATIVITY</b> Creativity, innovation</p>		<p><b>LEADERSHIP</b> Leadership, responsibility, assertive communication, self-presentation, social influence with others</p>

*Table 1.* A conceptual model of 21st century skills and competencies (Adapted from Schechtman et al., 2013)

In a recent review, Farrington et al. (2012) situated these competencies within an academic context consisting of academic behaviours, learning strategies, social skills, academic perseverance and academic mindsets.

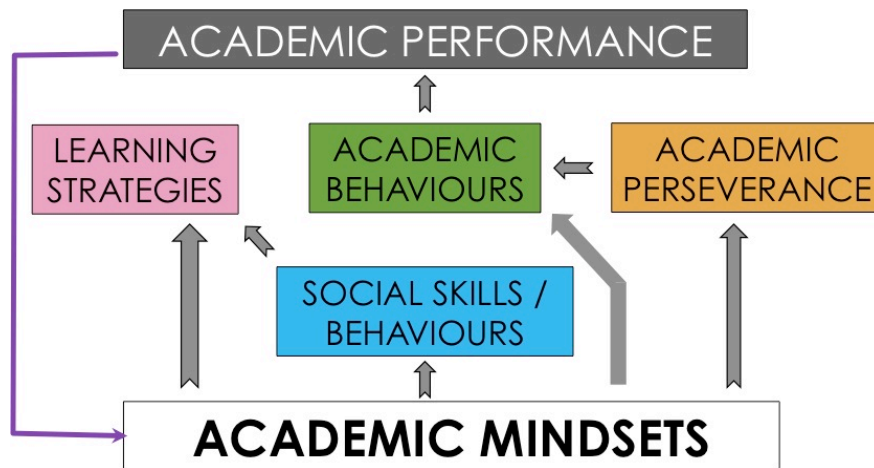


Figure 1. A conceptual model of non-cognitive skills on an academic framework  
(Adapted from Farrington et al., 2011)

1. *Academic behaviours* have the most direct impact on academic performance. All other competencies work through academic behaviours to impact academic performance.
2. *Social behaviours* have long been linked to positive academic performance across multiple domains (Beets, et al., 2009; Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2010). Positive social behaviours allow students to participate productively in classroom activities “interacting effectively with others and avoiding socially unacceptable responses” (Gresham & Elliott, p1990, p.1 as cited in Farrington et al., 2012, p. 48).
3. *Learning strategies* involve how learners perceive and respond to academic tasks and demands. As learners continue to implement effective strategies to engage with tasks, they develop a deeper repertoire from which to draw and become more adept at selecting and implementing learning strategies. This ability is a defining characteristic of mastery learning.  
Learning strategies can take the form of cognitive, metacognitive and resources oriented strategies and are effectively implemented in four phases:
  - i. Defining and identifying the learning task;
  - ii. Setting goals in relations to the task and developing plans to reach those goals;
  - iii. Enact tactics/strategies and monitor progress;
  - iv. Reconfiguring approaches to future tasks based on cumulative experience (Duckworth et al., 2010; Farrington, et al., 2012, p. 40).
4. *Academic perseverance* involves not only the initial momentum in a focused direction (motivation) but also the ability to maintain that momentum in the face of obstacles and distractions (tenacity / grit). This is integral to ensuring that implemented strategies and behaviours have the opportunity to succeed. Duckworth concluded that grit is “essential to high achievement” over and above the contributions of intelligence and ability, and that what students lack in tested achievement they can make up for in grit (Duckworth, Peterson, Matthews, & Kelly, 2007, p. 1088).

5. *Academic mindset* underscores all these competencies and consists of how learners view themselves in relation to the learning environment – the process of learning and the effort required to support academic performance. A central component to academic mindset is students' belief in their academic ability (self-efficacy), which has a substantial impact on what Dweck calls “academic tenacity” (i.e. perseverance). Students need to believe that their efforts will produce desired outcomes. Self-efficacy has been shown to predict levels of academic performance above and beyond measures of academic ability and history of test scores (Dweck, Walton, & Cohen, 2014, p. 5). Mindset can be understood to be aligned along the following parameters:
- Fixed versus incremental theory of intelligence
  - Performance (performance approach or performance avoidance) versus Learning Goals (mastery goals)
  - Communal versus competitive goals (research shows that students are more motivated and successful when learning activities involve cooperative rather than competitive or individualistic goals)
  - Existence of long-term goals or academic purposes contributing to students' engagement and tenacity
  - Degree of self-regulation and self-control allow students to move beyond temporary distractions and remain focused on long-term achievement<sup>3</sup>.

Research has demonstrated that non-cognitive skills can be developed and shaped and are more malleable than raw intelligence, which tends to solidify by the age of seven. The shaping of non-cognitive skills is dynamically complementary where early investment in competency building enhances the effects of future competency development both directly and through cross-pollination (Kautz et al., 2014, pp. 11, 61).

Like all instruction, non-cognitive skills instruction is effective when aligned with learner development. For example, during the adolescent years, non-cognitive skills are much more malleable than cognitive ability. Unlike interventions that target academic skills or academic behavior, which often appear spectacular in the short term but rarely if ever maintain their effects over a longer term, the most effective adolescent interventions target non-cognitive skills development (Kautz et al., 2014, pp. 7-8). As a preventive intervention, non-cognitive skills instruction is particularly crucial during sensitive periods of adolescence, transition to upper secondary and transition to post-secondary (tertiary) education.

## **Adolescence**

The middle school years are characterized by decreases in school performance and engagement, observed in student grades (i.e. academic measures) and communicated in student self-reports of self-efficacy, motivation and attitude toward school (Farrington, et al., 2012, p. 55). During this time, there is a stage-environment mismatch between learner development and educational systems. As students become more individualistic and ready to assume greater responsibility for learning, middle schools assert more control and limit opportunities for students to exercise

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<sup>3</sup> One notable example is Walter Mischel's Marshmallow experiment, which demonstrated a strong correlation between the ability to exercise self-control and improved scores on achievement tests (Shoda, Mischel, & Peake, 1990, p. 985).

autonomy and choice. Moreover, academic demands tend to decrease just as students develop the capability to engage in more complex, abstract forms of problem solving, (Blackwell, Trzesniewski, & Dweck, 2007, pp. 246-247).

Though young children are often unable to distinguish between ability and effort, adolescents begin to equate increased effort with a lack of ability. At a time when learners are particularly sensitive to social comparisons, middle school classrooms emphasize the relative standing of students based on their abilities, recognizing students who apparently succeed with little effort over their peers who struggle.

### **Transition to senior secondary**

The high school environment produces vastly different challenges for learners. Along with managing more demanding coursework and navigating a variety of social challenges, students must wrestle with dynamic developmental changes, all this with less support and monitoring from teachers and parents (Farrington, et al., 2012, p. 59). In a survey of high school dropouts, 69% reported that their school environment did not motivate, inspire or support them to succeed, a feeling shared even among those who remained in school (Dweck et al., 2014, p. 2).

Most educators attribute declines in students' grades to students' low academic skills; however, drops in academic performance are the result of declines in effective academic behaviour, a characteristic common among all students regardless of academic proficiency. Indications of this change in academic behavior manifest early. Roderick (1994) found that, regardless of which grade students eventually dropped out, at-risk students experienced substantial declines in their academic behaviors (e.g. grades and attendance) as they *transitioned* into high school. This finding -- that a student's capacity to manage the high school transition highly predicts school dropout -- has been replicated in multiple studies (Farrington, et al., 2012, p. 59).

### **Transition to postsecondary**

This period is often summarized as culminating in a deficit of social capital. Simply put, too few students pursue tertiary education and fewer still complete it. Currently in the U.S., for the first time in history, the retired population is more educated than those adults entering the workforce (Nagaoka, et al., 2013, p. 45).

Colleges demand a new kind of learning from students, requiring them to draw from the content knowledge of high school as they incorporate the more conceptually oriented learning prevalent in post-secondary education. Students need to adopt beneficial mindsets and effective learning strategies, utilizing and applying their synthesized knowledge to understand and solve real world situations (Farrington, et al., 2012, p. 69). They must engage in meta-learning processes, being aware of what they know and what they do not know, and being able to ask for and secure help when they need it (Yoder, 2014, p. 6). Essential to all this is students' self-control – their ability to overcome immediate gratification in pursuit of long-term goals. As Duckworth and Seligman (2006) point out “a major reason for students falling short of their intellectual potential [is] their failure to exercise self-discipline” (p. 939). *College readiness* entails that, over and above course content knowledge, students



need to develop appropriate non-cognitive skills to adapt to this new environment and make knowledge meaningful and pertinent.

This need for well-developed non-cognitive skills extends into the workforce. Results from a survey of over 400 employers in the United States indicate that, in contrast to writing, mathematics, science and history/geography, which ranked 6<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> and 19<sup>th</sup> respectively out of 20 skills, the four most important skills are oral communication, teamwork/collaboration, professionalism/work ethic and critical thinking/problem solving (Garcia, 2014, pp. 9-10; Kautz et al., 2014). Consistent with these findings, the confederation of British industry identifies a desire to learn, the ability to apply learning to improve and take advantage of change, communication, working with others, problem solving, the ability to manage one's self and one's career as foundations for *employability* (Kautz et al., 2014, p. 30).

The impact of non-cognitive skills both inside and outside the classroom argues for educators to redefine what it means to be *college* and *career ready* (Garcia, 2014, p. 10; Nagaoka, et al., 2013, p. 50).

### **Putting Non-Cognitive Skills into Practice**

*Excellence in education is when we do everything we can to make sure students become everything they can.*  
- Carol Ann Tomlinson

The emphasis on quality measures of academic performance, though important to ensuring educational *equality*, is not enough to promote the aims of educational *equity* because it fails to address the condition required for learning. To ensure that each student has the best possible opportunities to learn, educators must first help students develop the capability to capitalize on learning opportunities. The competencies that function to fulfill this role have been described as non-cognitive skills. Understanding that academic behavior is not a pre-determined characteristic of students but rather a product of students' interaction with their educational environment, educators' goals should be to create safe and supportive contexts that create opportunities to practice and promote the development of non-cognitive skills necessary to succeed (Beets, et al., 2009; Durlak et al., 2011; Duckworth et al., 2010; Dweck et al., 2014; Jones & Bouffard, 2012; Yoder, 2014).

In an exhaustive meta-analysis, Durlak et al. (2011) identified four elements common to the most effective non-cognitive skill instruction, represented by the acronym S.A.F.E.:

1. Sequenced, coordinated activities that connect to skills;
2. Active forms of learning;
3. Focused on developing one or more social skills; and
4. Explicit about targeting specific skills.

Non-cognitive skills instruction should also be intentional and relevant, seen as a natural component of classroom and school culture, reflect the collaborative efforts of students, staff, teachers and parents (i.e. all stakeholders), and also exist outside the classroom -- in hallways and playgrounds and even in students' homes and their communities (Jones & Bouffard, 2012, p. 7). Teachers can actively support and deliver non-cognitive skills instruction by ensuring their practice provides

opportunities for students to engage with and develop these skills. Drawing from Yoder (2014), the following is a general list of practices teachers can incorporate to foster non-cognitive skills in their students.

	<b>DESCRIPTION</b>	<b>DETAILS</b>
<b>Student centered Discipline</b>	Use proactive classroom management strategies rather than reactive, punitive measures through which students practice and learn how to regulate their own behaviour and problem solve difficult situations that arise.	Developing classroom rules and consequences and allow opportunities to practice these rules.
<b>Teacher Language</b>	Encourage effort over ability, focusing on what the student has accomplished and what the student needs to improve. Encourage and support students in their efforts at self-monitoring and self-regulating behaviour and emotions.	Use of metacognitive prompts and models
<b>Responsibility &amp; Choice</b>	Provide students with controlled and meaningful choices. Develop “democratic” classrooms where students are able to provide meaningful input into the development of classroom expectations and procedures as well as the academic content and even how academic content is learned.	Incorporate practices such as peer tutoring, reciprocal teaching, cross-age tutoring or participating in service learning or community service programs
<b>Warmth and Support</b>	Create structure in the classroom where students feel included and appreciated by peers and teachers	Improve communication density, implement morning meetings, set aside small moments throughout the day or using class projects to allow students opportunities to share what they have been learning
<b>Cooperative Learning</b>	Implement these qualities to ensure that cooperative learning is effective: <ul style="list-style-type: none"> <li>✓ Positive Interdependence</li> <li>✓ Individual Accountability</li> <li>✓ Promoting one another’s success</li> <li>✓ Applying interpersonal and social skills</li> <li>✓ Group Process</li> </ul>	Have students work in collaborative groups to develop rubrics to evaluate presentations, web content, literature etc.

<b>Self-reflect ion and Self-assess ment</b>	Provide opportunities for students to measure their work and the work of their peers against performance standards Support students' goal-setting and monitoring progress toward their goals. Help students identify challenges and develop effective strategies to overcome these challenges Help student recognize when they need help and how to seek it	Timely and effective feedback allows students to recognize what strategies worked well and what didn't. Handwritten comments on report cards that suggests strategies to help students improve, substantially reduces the likelihood of school withdrawal.
<b>Balanced Instruction</b>	Provide students with different avenues to engage with material	Strive to effective balance direct instruction with active learning as well as collaborative with individual learning
<b>Academic Press and Expectatio ns</b>	Academic press refers to a teachers' implementation of meaningful and challenging work Academic expectations focus on the teacher's belief that all students can and will succeed. Teachers should ensure that students feel pressure to succeed as well as feel responsible for accomplishing or failing to accomplish their academic work	Teachers with high (and achievable) expectations of their students produce students who are capable of achieving those expectations. Students who understood learning as understanding (versus memorization or doing academic tasks) are more likely to employ a wider range of learning strategies

Table 2. Effective teaching practices for non-cognitive skills instruction (Adapted from Yoder, N., 2014)

## Conclusion

*Education would be much more effective if its purpose was to ensure that by the time they leave school, every boy and girl should know how much they do not know and be imbued with a lifelong desire to know it.*  
 - William Haley

As teachers, it is tempting to ascribe poor academic performance to students' poor cognitive ability, lack of motivation or unwillingness to make an effort. This usually results in either teachers redoubling efforts to "get the message across", providing additional work and firmer guidance, or worse, teachers giving up on the student, ascribing poor academic performance to cognitive inability (*The student just isn't smart enough*). However, such practices tend to view academic performance without considering the conditions required to support learning. All students want to learn. Students continuously try to make sense of their environment and their academic behaviors reflect how successful they are at making meaning. Unfortunately, expectations are often placed on them that they are not yet capable of achieving, leading to frustration and disassociation from school and education. Increased expectation and greater academic press only serves to frustrate and alienate struggling students further. Facilitating the development of students'

capabilities by bolstering non-cognitive skills closes the gap between students' capabilities and the academic and developmental expectations placed on them.

A substantial body of research has shown that non-cognitive skills and cognitive development are interdependent. Even small changes in mindset have been demonstrated to produce dramatic results in academic gains (Blackwell, Trzesniewski, & Dweck, 2007; Duckworth et al., 2010; Duckworth & Seligman, 2006; Durlak et al., 2011). In a substantive meta-review, Durlak et al. (2011) concluded that the effects of non-cognitive skills interventions accounted for an 11-percentile difference on achievement test scores (p. 419).

In addition to academic performance, non-cognitive skills also predict a wide range of life outcomes, including employment, health and criminality. In one study, Yaeger and Dweck (2012) investigated how an incremental theory of intelligence (mindset) impacted real-world aggression. Building on the idea of incremental intelligence, the intervention emphasized the potential for change throughout one's lifetime, despite the difficulty and uncertainty of it. Subjects participated in a controlled experience of exclusion (a virtual game of catch). When participants were given the opportunity to retaliate, students in the treatment group showed less aggressive retaliation and more prosocial reaction<sup>4</sup>. In a one-year follow up, students in the incremental mindset group were more likely to be nominated by teachers for improved conduct both toward their peers and within the classroom (Yaeger & Dweck, 2012, p. 308).

The predictive power of non-cognitive skills rivals and even outperforms traditional measures of cognitive ability, predicting length of schooling, labour productivity, longevity, relationship stability and criminality *in addition to* academic performance. Despite the ability of non-cognitive skills to predict and impact success across school and life, non-cognitive skills instruction should by no means replace or even take away from the academic reforms and practices that enhance cognitive abilities. Instead, it should be integrated to foster development and instruction by making students capable of capitalizing on educational opportunities. Programs that promote non-cognitive skills instruction should be an integral part of an effective educational portfolio. Only when the development of the whole child becomes central to educational reform can educational equity be made a reality.

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<sup>4</sup> Participants were asked to "retaliate" by giving a dish that was identified as distasteful by the person who had excluded them. In addition, they could include hot sauce and/or a personal note explaining their choice. The incremental mindset group allocated 40% less hot sauce than the control and were three times more willing to send a prosocial note explaining and even apologizing for their choice.

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