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Research Article

NON-COGNITIVE SKILLS AS ESSENTIAL LIFE-SKILLS FOR SCHOOL STUDENTS

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ABSTRACT

Traditionally, general intelligence was considered the best predictor of success and achievement. Recently, however, the effects of factors such as grit, self-efficacy, discipline, resilience, etc. which are non-cognitive in nature has come under the spotlight. Non-cognitive skills have been found to exert as significant an effect of life outcomes as cognitive skills. The paper discusses the importance of non-cognitive skills in determining success in life and how they can be learnt. The role that parents and school teachers can play in developing these essential life skills will also be discussed.

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INTRODUCTION

There are many characteristics that combine to allow a person to be called educated. To be called an educated individual, one needs to have command over the subject matter, theories and facts not just from his own discipline but also from the general walk of life. However, education just is never enough. A better achievement would be to be a knowledgeable person, keeping in mind an individual's overall development. This would include skills such as social skills, persistence, critical thinking skills, creativity, problem solving skills, and self-control, etc. which aid them in contributing significantly to the society and to achieve success in life. These traits have been clubbed together to be known as non-cognitive skills (Heckman & Kautz, 2013) which have been broadly defined as representing the "patterns of thought, feelings and behavior" (Borghans *et al*. 2008) of individuals that may continue to develop throughout their lives (Bloom 1964).

Non-cognitive skills are classified in terms of the "Big Five" categories by psychologists: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Bernstein *et al*., 2007). However, educators have a tendency to focus on non-cognitive skills that are directly related to academic achievement such as academic behavior and outlook (e.g. going to class, participation in activities, sense of belongingness, understanding that skill and capability can grow with endeavor), academic resolve (e.g. self-discipline, grit), learning approaches (e.g. meta-cognitive strategies, goal-setting), and social skills (e.g. cooperation, interpersonal skills) (Farrington *et al*., 2012). Non-cognitive skills encompass those skills that are not cognitive in nature and which influence the behavior of an individual including empathy, gratitude, emotional maturity, optimism, grit, verbal and non-verbal communication, etc.

Are Non-cognitive Skills Essential?

Non-cognitive skills are essential. For their own sake as well as for the impact they have on other aspects of life. Non-cognitive skills correlate well with individual and collective consequences such as academic achievement, productivity, earnings, civic participation, etc. (Almlund *et al*., 2011). Levin (2012b) summarized that 'these dimensions play a role in forming healthy character and contribute to productive relations in work-places, communities, families and politics'. Heckman & Krueger (2004) emphasize that at times the most unrelenting, self-disciplined, malleable and dependable individuals surpass those with higher cognitive abilities and the reason behind it, they assert, is non-cognitive skills. The nurturance of these skills needs to an implicit as well as explicit goal of formal education (Rothstein, Jacobsen & Wilder, 2008). Gabrieli, Ansel & Krachman (2015) report that students with stronger non-cognitive skills demonstrated higher academic

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achievement throughout their school life. For example, Borghans *et al*., (2008) reports that the scores of an individual on IQ test is not just determined by his innate intelligence, but also by his ability to focus and stay self-motivated. The academic behaviors of students such as regular attendance, participation in activities, achieving goals, are strongly correlated to academic attainment (Farrington *et al*., 2012). Studies across various fields indicate that these skills predict, not just academic outcomes, but also predict a variety of adult outcomes such as employment, financial stability, criminal behavior and health (Gabrieli, Ansel & Krachman, 2015). Researchers also assert that non-cognitive skills are better predictors of long-term results as compared to scores obtained on exams (Chetty *et al*. 2011; Heckman & Rubinstein 2001; Lindquist &Vestman 2011; Mueller & Plug, 2006).

Binet and Simon in 1916 noted that performance in school "admits other things than intelligence; to succeed in his studies, one must have qualities which depend on attention, will and character." Even at a time when intelligence was accorded all the credit for success in life, the importance of non-cognitive skills was being emphasized upon. More recently, Olson (2012) attempted to explain the relationship between non-cognitive skills and academic performance. Completing assignments on time help students remain self-motivated and self-disciplined. Taking part in competitions develop resilience. Doing group activities develop social skills through which they develop the ability to work together. Combined with absence of aggressive behavior, these skills predict and facilitate learning (Olson, 2012).

Farrington *et al*. (2012) reviewed literature regarding the contribution of non-cognitive skills to academic performance. Their results report that academic achievement reflects not only knowledge of academic content but also other non-cognitive attributes which are critical for success in life. Rosen *et al*. (2010) assessed relationship between academic performance and seven non-cognitive skills, namely motivation, effort, self-regulated learning, self-efficacy, self-concept, social behavior, and coping and resilience among school children. Gutman and Schoon (2013) provide a review of studies on interventions aimed at improving non-cognitive skills in children. Additional references are found in the works by Brunello and Schlotter (2011) and Garcia (2013).

Can these skills be learnt?

Those who possess or develop their non-cognitive skills have a higher tendency to develop cognitive skills, whereas those who possess cognitive skills may not necessarily develop non-cognitive skills. However, these skills can, fortunately, be learnt.

Non-cognitive skills develop across an individual's lifetime and, generally, do not peak until late adulthood. For example, conscientiousness expands from childhood until one's fifties to sixties which is in contrast to intelligence, which peaks in late adolescence and then starts to decline (Borghans *et al*., 2008). These points to a major developmental difference: while the flexibility of non-cognitive skills makes remedy possible, their prominence makes the cultivation of these factors in early childhood idyllic (Kautz *et al*., 2014).

The role of parents in the development of non-cognitive skills is foremost. Parents' efforts augment cognitive skills in the earlier stages and non-cognitive skills in later stages of life and it is easier to develop non-cognitive skills in adolescence than cognitive skills. Non-cognitive skills are innate for the most part and the interactions with the family determine the course of development of these skills. However, these skills can be developed through direct learning as well as practice or experience.

This skill set is not measured and viewed the same as traditional intelligence, yet has been proved to have a tremendous impact on an individual's life. Non-cognitive factors like resilience, growth mindset, optimism, self-efficacy, hope, grit, etc. are all essential in attaining success in life whether it be academics, workplace, social interactions, family life or other aspects of life.

Students have been known to develop these skills within the school premises. However, this learning has always been vicarious. Specific, explicit instructions directed towards developing these skills have never been targeted. Is it possible to foster these skills as a part of the regular curriculum and develop them in all children alike? Can these skills be taught directly focusing on future success?

Mounting evidence suggests that the answer is yes. Ironically, James Heckman, a Nobel Prize Laureate in Economics, provided first evidence that these innate characteristics aren't inflexible; rather they can be cultivated and enhanced. He further suggests that there are many efficient ways through which these skills can be improved. Tim Kautz and colleagues describe how non-cognitive skills are suppler at an early age in adolescence, although it is best to start focusing on since childhood. They start developing in the preschool stage and continue throughout the educational and professional life. However, development of these skills is dependent on the various aspects of life such as family, society, student-teacher interaction, school, etc.

Durlak *et al*. (2011) analyzed over 200 interventions the objective of which were to increase social-emotional learning of individuals in the age range of 5 years to 18 years. This meta-analysis concluded that not only did these interventions increased social and behavioral skills, the participating students also showed higher academic achievement with an associated gain in performance estimated to be equivalent to 11 percentile points. Levin (2012a) asserts that this gain is one-third of a standard deviation which is quite significant keeping in mind the education policies. This meta-analysis and subsequent investigations demonstrates how non-cognitive skills and cognitive skills are inter-dependent and how the former sustains the latter.

Other empirical findings also demonstrate how interventions designed to enhance non-cognitive skills have a simultaneous positive effect on academic performance, again highlighting the interdependence of the two domains on each other.

The Role of Teachers

Teachers can not only influence the academic skills of the students they interact with (Rivkin, Hanushek, & Kain, 2005); they are equally influential on the development of their non-cognitive skills (Gershenson, 2016; Ruzek *et al*. 2014; Jackson

2012; Jennings and DiPrete 2010; Koedel 2008). Jackson (2012) compared the effect of teachers on cognitive and non-cognitive skills of students and reports that though the precise mechanism through which teachers affect non-cognitive skills may not be known, teachers affect the non-cognitive skills (as measured through suspensions, absenteeism, grades, etc.) specifically so in the case of English teachers. Additional research by Ruzek *et al*. (2014) provides support for this finding. Students' motivation was measured through mastery and performance achievement goals and it was reported that teachers are instrumental in the motivation level of their students. Gershenson (2016) also reports that teachers have a significant effect on the absence of the student from school.

Though, these findings have been researched of late, any parent truly involved in the child will corroborate these results. The class teacher or the various subject teachers' approach is crucial to the students' performance, grades, regularity, discipline, overall development, etc. This is why it is essential that teachers acquire regular and timely trainings to update themselves on various issues related to students. It is equally important not to burden the teachers with extra administrative work so that they can focus on preparing their lessons and explore innovative ways through which to impart knowledge.

Furthermore, teachers vary in their ability to influence students. Personality differences of the teachers as well as those of the students lead to different connections between teachers and students. Araujo *et al*. (2016) studied kindergarteners who had been assigned to teachers randomly. Various assessments were conducted which included tests of working memory, executive function, attentiveness, cognitive flexibility, etc. They report that increase in classroom quality by one standard deviation is associated with 0.07 standard deviation increase in students' executive function scores 0.11 standard deviation increase in language and math scores; suggesting that teachers differ in their ability to enhance non-cognitive skills. The effect, however, is smaller for non-cognitive skills as compared to cognitive skills (Araujo et al., 2016).

Blazar and Kraft (2015) made similar observations in upper-elementary school teachers and reported that elementary teachers had a similar effect on students' non-cognitive skills, however, the magnitude of effect on non-cognitive skills and cognitive skills was alike as could be measured by math test scores.

A weak correlation has been found between a teacher's ability to increase cognitive skills and non-cognitive skills suggesting that teachers need to take a different approach for the development of both these types of essential skills (Jackson, 2012; Blazar & Kraft, 2015; Gershenson, 2016). Jackson (2012) found a weak relationship between a teacher's capability in increasing the scores achieved on tests and the teachers' capacity to improve non-cognitive skills.

Further, Blazar & Kraft (2015) provided empirical support to this assertion when they found that the correlation between a teacher's effect on students' achievement in math and the same teachers' effect on the students' self reported self-efficacy in math was 0.19, further corroborating the fact that teachers effective in enhancing cognitive skills may not be as effective in augmenting non-cognitive skills and vice versa. Gershenson (2016) also reported similar findings when a study compared the capacities that teachers require to boost attendance and test scores. It was found that the competence required for the two functional areas was markedly different although the mechanisms were unclear.

Research in the area which would establish the specific competences required by teachers aimed at improving non-cognitive skills in students is limited. However, a study conducted by Blazar & Kraft (2015) reports that those teachers whose students showed the largest gain in non-cognitive skills were found to be good at providing emotional support to their students and at organizing their classroom efficiently.

These findings are crucial keeping in mind the criteria on which teachers are evaluated. While teachers' performance appraisal is being done, the appraisal focuses only on the academic achievement of the student, whereas the efforts of the teacher in making the student grittier, more disciplined, more determined may not be given enough importance. Though there is no doubt that in today's competitive world, recession struck job market and booming population getting ready to work, it is important to cut swathes with academic achievement; characteristics like self-efficacy, grit, resilience, optimism, discipline, etc. are equally essential for the student to achieve success in life. Cognitive as well as non-cognitive skills, both, are equally essential for an individual to attain success and happiness in life. However, the long-term effects of non-cognitive skills are not comprehended by school authorities and by parents. This is the reason that the focus of school administration is on enhancing the academic achievement which, though, prepares the student for academic/vocational success but sadly leaves in wanting in the rest of the domains of life.

Non-cognitive skills exert an influence on life is not questionable. There is, as yet, a big challenge in front of curriculum developers, academicians and policy makers. The bureaucratic approach adopted by most policy makers would not suffice. Issues regarding non-cognitive skills still needs to be addressed as to which of the non-cognitive skills should be focused upon (some are not desirable in schools and yet are desirable in work places, e.g. externalizing behaviors increase student's misbehavior and still contribute to higher earnings later in life (Papageorge, Ronda & Zu, 2016)), how these skills should be measured (self-reporting happiness, optimism, self-efficacy, etc. is not always appropriate), and what are the short-term effects and what would be the long-term effects.

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