

The roots of education are bitter, but the fruit is sweet

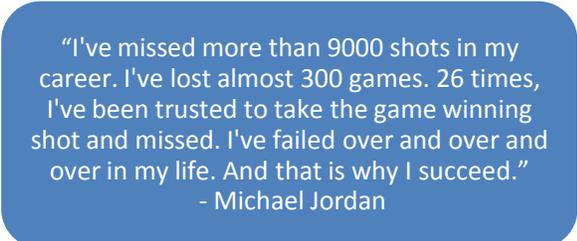
—Aristotle

Aristotle's words aptly capture the education scenario even in contemporary times. The process of learning begins with the bitter acceptance of knowing nothing and continues on an uncertain and tumultuous route, where often evaluation is given precedence over learning. Education is supposed to prepare individuals for the outside world. The outside world, on the other hand, need not necessarily target the skills that have been procured, but focus more at 'who' (read the student) possesses these skills.

The building of this 'who', though features as one of the objectives of education, is often sidelined or thought of as developing more as a byproduct of the educational process and is considered as not requiring any more attention than that. The incidental experiences that cocoon learning shapes the character of the student. Can these incidental experiences be debilitating to the learning process instead of scaffolding it?

The journey from failure to success is inspiring as well as eluding. Failure is a necessary bitter pill. Any achiever would endorse that failure is far more common in the process of achievement than

is success. Yet why is failure tabooed? No one wants to mention them or even acknowledge them let alone



"I've missed more than 9000 shots in my career. I've lost almost 300 games. 26 times, I've been trusted to take the game winning shot and missed. I've failed over and over and over in my life. And that is why I succeed."
- Michael Jordan

talk or discuss them. It is the event that is used to threaten people into working harder. Feelings like guilt, shame, humiliation are associated with it. You are supposed to miraculously get over it or just deal with it, when it happens to you, making the road to recovery intense and hazy.

Consider the automobile component called the 'shock absorber', whose mere function is to absorb the shock waves emitted during transit. It indirectly but decidedly contributes to speed, quality of travel and ensures smooth functioning, though all these effects have no relation to its primary function as a shock absorber. Now consider the above as a

metaphor to understanding the learning (educational) process. The parallel of shocks in the journey of education is failure. Failure is often a more loyal companion in education than success. What do we then consider would do the job of the shock absorber? Considering that education is widely understood as a psychosocial process, we would look at the same context for the antidote.

While the world of sports has woken up to the importance of ‘mind training’ for better performance, academic performance (perform/achieve on par to potential/ability) in education is still looked predominantly as a function of the individual’s aptitude or learning related issues.

In the course of an academic career at various levels, it has been observed that Academic Performance of a student is affected by factors beyond content knowledge and relevant test taking skills. Non – academic factors, often psychological in nature, also significantly affect the academic performance.

During the work period at *i*ACT (International Academy for Creative Teaching currently renamed as CERSSE – Centre for Research in Social Sciences and Education), the researcher had the opportunity to work at various schools differing in their socio-economic context of the students and the school curriculum. The school work also involved conducting a year long program in life skills across grades and also to function as a school counselor. The life skills classes were designed along the paradigm of UNICEF’s recommendation of Life skills. The plethora of skills was categorized along four broad areas – Intrapersonal, Interpersonal, Social and Study (academic) skills.

In brief, the format of life skills classes comprised of one and a half to two hour sessions, involving peer – group based interactions and discussions often concluding in group presentations. These group presentations were rated by fellow groups and were competitive in nature. The classes were conducted for individual grades and grade-level specific topics were chosen.

A few sessions into the program, teachers reported an improvement in classroom participation and increased academic performance from some of the ‘academic – low achievers’. This observation from teachers piqued the researcher’s interest in considering the influence of non-academic factors affecting academic performance of the student.

Further discussions were held with teachers and parents in schools that encouraged non academic activities like - sports, fine arts, performing arts – along the lines of their influence on student’s academic performance. Some teachers and parents held the view that these activities were distracting to academic interests (as it accounted to more time and effort engaged in the pursuit of non-academic interests). Some others reported a change in the student’s confidence levels, which contributed to improved classroom participation and a healthier (positive) attitude towards performance, academic performance.

Probably inclusion of non-academic activities in regular curriculum for e.g. sports, fine arts, performing arts or life skills based classes, allowed an alternative platform for students to explore other skill sets and abilities. Acknowledgement of their abilities in these fields enabled a better and a more positive and healthy assessment of their abilities and therefore a healthier sense of self. An expression of this healthier self possibly contributed towards their academic performance.

It is a generally observed practice that in order to improve the academic performance of a student, the usual proposed strategy is to concentrate on his/her academic content development through special tutoring and sometimes improve his/ her test taking skills through mock exams. But not always do these strategies translate into better academic performance.

This indicates the role of other non-academic factors at play. Perhaps these non-academic (psychological) factors could better explain the discrepancy between a student’s academic performance and his/her academic abilities and preparation.

While ‘study skills’ related training is looked into, the play of larger constructs with relation to the student is limited to a few, the predominant of which is ‘self –esteem.’ The literature in this regard is inconclusive as the relationship between self esteem and academic achievement is found to be bidirectional and significantly correlated but not necessarily causatively related.

A plethora of factors have found to be influencing academic achievement, which can be grouped into – student related variables, parent related variables, teacher related variables, school related variables and socio-economic related variables. Of the student related variables, attention has mostly been bestowed on the concepts of intelligence, emotional intelligence and self esteem.

What is Academic achievement?

How is it measured and its implications for the student?

It is really not a surprise at all that across the world and most syllabi, the widely accepted form of evaluating the learning process of a student in a formal academic setting is by their ‘performance’ in a formal examination.

The process might undergo individualistic changes. For example, some syllabi prescribe a year-round formative assessment or a year end summative assessment. Though a learning process in a classroom setting is contributed by various processes like classroom discussions, assignments, projects, lecture sessions, quizzes, worksheets, oral presentations, most of these are not the chosen methods of final evaluation.

Evaluation (as prescribed in the syllabi selected to be included in the current study) is usually a three hour written examination that carries the most weightage as compared to other forms of evaluation methods.

The result of these formal evaluations is the (sole) criteria for promotion into the next grade. It is not a surprise again that most often the curriculum itself is delivered keeping in mind the performance factor at the examinations.

While, certain portions are more stressed upon for being more important from the 'examination point of view', venturing outside the prescribed portions is looked at as a waste of time as they will not contribute in getting 'good marks'. Keeping in mind the above contemporary scenario, the researcher is attempting to examine the significance of 'academic achievement'.

Good (1959) defined academic achievement as the knowledge attained or skills developed in the school subjects, usually designated by test scores or marks in the school subjects or by test scores assigned by teacher.

Kohli (1975) mentions that Academic achievement has been variously defined as a level of proficiency attained in academic work or as formally acquired knowledge in school subjects, which is often represented by percentage of marks obtained by students in examinations.

Academic achievement is also used as an important parameter of self evaluation by learners themselves (Reis et al. 1984). This is indicative of the narrow and self-deprecating purview with which learning is evaluated and also hints at the direction of remedial work in case of academic underachievement.

Our current society still considers academic achievement as (more often) the most (sole) important criterion to judge individual's total potentialities and capacities. These strong evaluations pronounce academic achievement as a significant foundation as well as an output of education than the learning process itself (Nuthana, Yenagi 2009).

The above views are in line with the School Quality report brought out by Azim Premji Foundation in 2007 (Reddy 2007) which presented the perspectives of developing and developed countries. The report mentions that the most popular opinion of determining the quality of schools is through the achievement of its students rather than from its resources - financial, physical or human. Parents too regard one's academic achievement

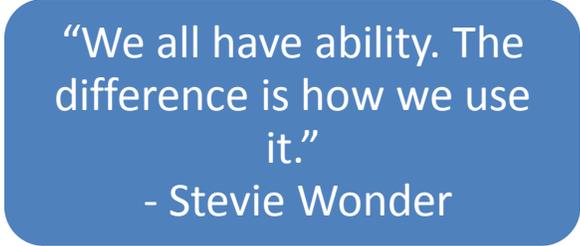
record of a school as a chief indicator of the quality of a school. The underlying rationale behind this is that success in academic achievement would lead to plausible employment although parents also consider the development of non-tangible qualities, such as respecting others, tolerance and discipline that enhance the quality of life of an individual.

Research has also shown that besides serving the routine criteria for promotion to the next class, academic achievement is often regarded as an index of all future successes in life (Shah 2009). One can understand the significant role that success in the school setup plays in impacting students' future opportunities, making some choices more likely and eliminating others (Lynn et.al. 2006).

Academic performance as a psychosocial process: What can student marks also tell?

Conley, Farkas, Paris & Winograd's study (2007,2003,1990 as cited in Farrington, Roderick, Nagaoka, Keyes, Beechum, 2012a) Academic performance is not just looked at as a measure of student's domain specific knowledge and basic academic skills. They also are indicative of certain academic behaviours that enabled them to successfully adapt and perform in later life situations even outside the world of academics like the ability to follow a routine, having organizational abilities with relation to time and effort, problem solving skills that enable the students to navigate and meet novel social and academic situations. Farrington et.al. 2012b also mention researchers who consider attitudes about intelligence, quality of peer and adult relationships and self control playing a decisive role in seemingly what is conventionally not associated to academic performance.

Academic achievement has also been considered the result of qualities like motivation, perseverance more so than the reflection of academic content knowledge. The supporting argument being that the quality that requires one to show up at work and



“We all have ability. The difference is how we use it.”

- Stevie Wonder

meet deadlines is the same as required to maintain regular school attendance and meet the necessary academic milestones. This simple self-discipline if not mastered at school would be overwhelming at college irrespective of content knowledge or intelligence (Bowen, Chingos, McPherson 2009:124).

Perhaps this must help us realize that all these skills or academic behaviours as indicated by the researchers especially – work habits, time management, help-seeking, metacognitive strategies, social problem solving, understanding about intelligence and how it functions, ability to refrain from temptation, may not just be a by product of or aid in academic achievement but also be playing a more significant ‘decisive’ role in academic performance. Again, academic performance here being more a product of psychosocial processes rather than being always an offshoot or product of intelligence or aptitude as popularly understood. If this is the case, then when students do not do well, other factors need to be looked into as well than just increasing their academic rigour.

A review of literature available in the area of Academic achievement brought to light a plethora of factors that have been investigated in relation to their predictive/ causative influence on Academic achievement. The factors have been diagrammatically represented in Fig 1(Pg. 9) (Puttaraju 2012)

The wide range of factors can lead to confusion regarding their individual influence on student academic achievement. This problem was answered by Wang, Haertel and Walberg (1993) who listed out critical factors that influenced student achievement in the order of priority. They arrived at the list after reviewing the influence of educational, psychological and social factors on learning – (i) student characteristics (ii) classroom practices (iii) home and community contexts (iv) design and delivery of curricular and instruction (v) school demographics (vi) state and district governance .

The Indicators of Academic achievement

Among the innumerable factors featured in ‘student related characteristics’ the most dominant predictors of academic achievement are: Prior academic success and cognitive ability of a student. There is not much that one can intervene with prior academic achievement. So, moving out to the next most predicting factor is cognitive ability of which the most significant predictor of academic achievement is Intelligence.

Research strongly supports IQ as the predictor of Academic achievement, Thorndike (1963) pointed out the exact correspondence between intelligence and achievement.

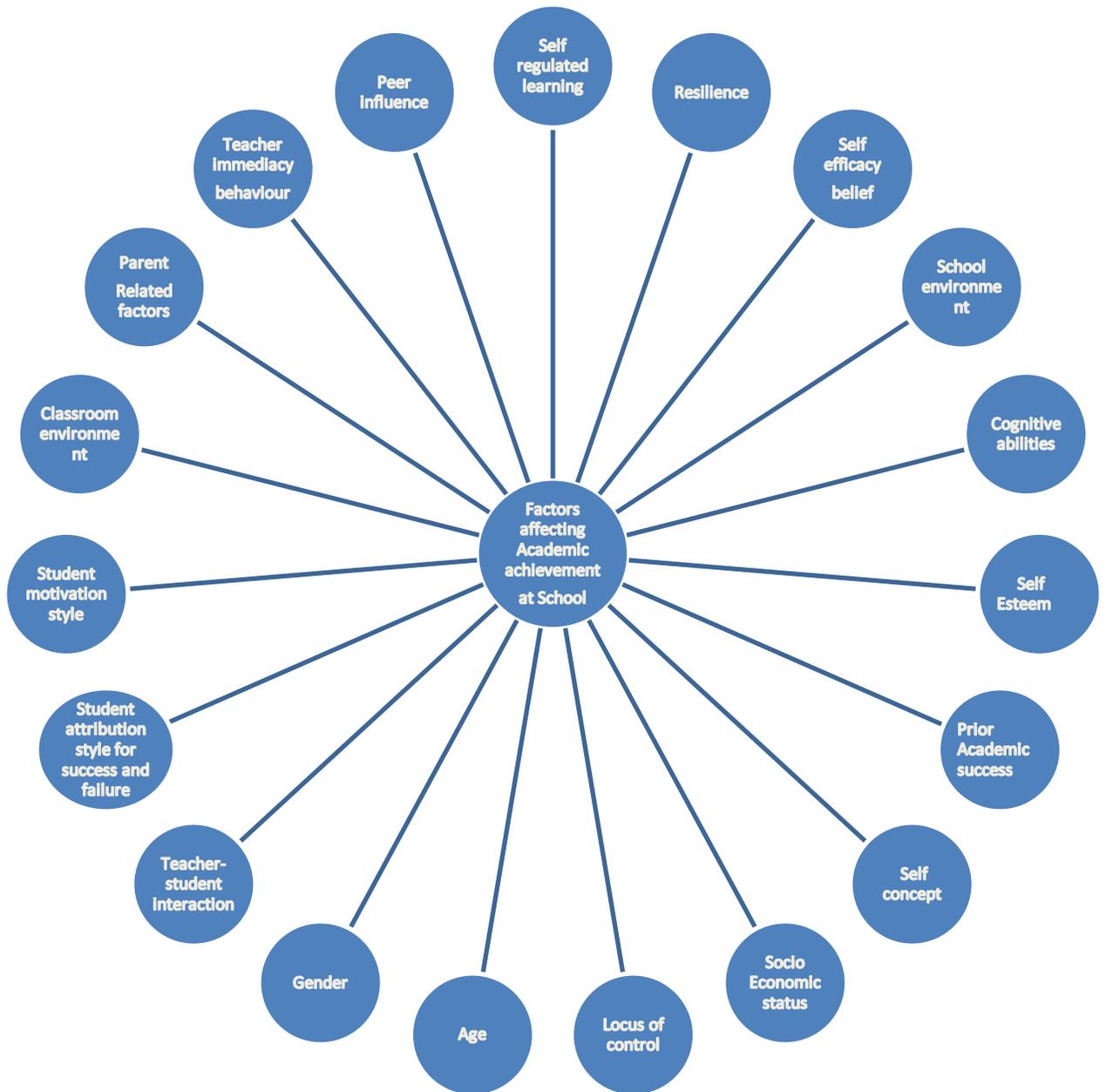


Figure 1.1: Factors investigated in relation to academic achievement

The correlation between intelligence and academic achievement seemingly declines with age, being highest in primary school and lower in middle school and college (Pind, J., Gunnarsdo'ttir, E. K., & Jo'hannesson, H. S. 2003).

The next trend of research tried to explore the influence of other factors while controlling intelligence. Academic performance of high and low achieving bright adolescents was found to be significantly different while their intelligence level was same.

When general intelligence was controlled for, researchers were able to find a significant relationship between personality variables like self confidence and pro-social behaviours to academic grades.

Borghans et.al. 2008, in their paper titled 'The economy and psychology of personality traits', base their understanding and thereby their discussions on intelligence on the definition formulated by American Psychological Association as quoted by Neisser et al. 1996:77- "the ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought". Caution is advised to the synonymous use of the term 'IQ' with intelligence, while it in fact refers only to scores on intelligence tests.

"...men did not differ in intellect, only in zeal and hard work.." Charles Darwin

Cherniss, 2000a, in the paper presented at the annual meeting of Society of Industrial and Organizational Psychology titled 'Emotional intelligence: what it says and why it matters', discusses the suggestion that cognitive ability is relevant for success at the entry level in a program and thereafter the individual differences in the performance is more determined by social and emotional factors.

They mention the study of researchers Snarly and Vaillant 2005 (Cherniss 2000b), who intended to study the limitations of IQ as a predictor. They found out that for two thirds of the 450 boys they included in the study, IQ had little relation to their success in work and other areas of life. They concluded that childhood abilities like the ability to handle frustration, regulation of emotion and quality of interpersonal relationships were better predictors instead.

The research paper (Cherniss 2000c) also mentions Feist & Barron's longitudinal study of 1996 on 80 PhDs in science. It was found out that social and emotional abilities were four times more likely to predict professional success than IQ.

Goleman 1998 proposes the view and Cherniss 2000 endorses it along with many other researchers that the emotional and social conditions or the so called 'non-cognitive' or 'non-intellective' factors play a causal role in determining an individual's success in very different way as conceived of intellectual or cognitive factors. These 'non-cognitive' factors create a fertile atmosphere for the intellectual or cognitive factors to flourish in and in the absence of which the chances of an individual's success only based on the cognitive factors would be considerably undermined.

Borghans et.al. 2008 state that IQ test scores are not always a reflection of pure intelligence and are often not 'unaffected' from the effects of factors such as motivation and anxiety. They are also of the opinion that development of cognitive ability (inclusive and not exclusively intelligence alone) are not stagnant constructs but rather they progressively evolve over the life time of an individual under the influence of personality traits such as curiosity, ambition, and perseverance. Again the factors considered to be personality traits are neither determining nor restricted to often narrowly defined personality traits.

Ability versus Personality debate

The idea of individuals' performance neither being a function of their potential alone also nor the measure of their (dormant) potential has been mentioned as early as 1907 in

the works of William James titled 'The energies of men' (1907). The term 'Energies' is used to refer to the inherent potential in an individual. In the book he states that- "...the problem is how can men be trained to their most useful pitch of energy? And how can nations make such training accessible to all their sons and daughters. This, after all, is only the general problem of education formulated in slightly different terms." James talks about the possibility that most individuals hardly utilize all their potential and very few are able to tap into their resources and transfer all of their potential if not most into performance. He also says that one of the primary functions of education is to enable individuals to learn to convert their 'energies' into performance, bringing us to the point again that it is not often potential that determines performance but many other factors inherent in the individuals and also in their circumstances.

James continues to state that not just educational system but it is the

"...despair lames people but it wakes others fully up.." William James

responsibility of psychology itself to enable individuals to unearth and utilize 'all' of their abilities. He states "... the great problem splits into two: 1) What are the limits of human faculty in various directions? 2) By what diversity of means, in different types of human beings may the faculties be stimulated to their best results? If fully answered the whole of mental science and of the science of conduct would find a place under them". He elaborates much eloquently that individuals more often than not do not perform to all of their ability until certain "appropriate conditions" compels them to do so. This brings us to contemplate on the nature of these conditions that allow for the conversion of ability into performance in some individuals. James very clearly mentions in this work that it is not the question of ability but 'appropriate conditions' that govern performance. He also attempts to answer what the 'appropriate conditions' could be and states that "...and unusual stimulus fills them up with some emotional excitement ...some unusual idea of necessity ... efforts ...carry us over the dam...". Though the answer seems vague it still gives us specific directions to look at for creating these conditions namely: emotions, ideas and efforts empower individuals to harness their energies.

Recent efforts in this direction have been taken up by researchers Duckworth et.al. 2007, who have also referred to James 1907 'The Energies of men' to propose the construct of 'grit' in the paper titled 'Grit: perseverance and passion for long term goals'. The researchers here talk about 'other factors' that determine success for individuals despite equal IQ. They also mention that these traits essential for success are independent of domain.

The researchers mention Terman 1942 et.al's longitudinal study of mentally gifted individuals which highlighted that the presence of noncognitive factors like perseverance, self confidence and integration with the goal as determining of these individuals success than their mental abilities. The study also extensively quotes from Howe. 1999 'Genius explained' that "... the most inherent of differences may be one of temperament rather than of intellect as such... more plausible of individual differences are factors that predispose individuals toward engaging in deliberate practise and enable them to sustain high levels of practise for many years" .

In the longstanding, debate between ability and performance. Of the many works used to support either of the stand, the one that made one of the strongest cases for ability is Herrnstein and Murray (1994), in their book *The Bell Curve*, where they showed that cognitive ability as measured by achievement test scores was not just related but in fact predictive of adult socioeconomic dimensions. An equally strong case was has been made by researchers Heckman et.al (2006) and Borghans, Duckworth and Ter Weel (2008) who have provided evidence for personality variables being just as powerful predictors of adult socioeconomic success as cognitive abilities.

'Grit' has been proposed by the researchers Duckworth et.al. 2007 to be a trait that is considered to be as important as intelligence if not more in determining success. Grit has been defined as 'perseverance and passion for long term goals' (Duckworth et al, 2007) , continuing efforts and interest in the face of excruciating challenges like failure, hardships and stagnant /low/no productive phases. The researches describe 'gritty individuals' to have high (emotional) stamina and viewing their course of achievement

as a marathon. They are unperturbed by boredom that sets in with repetitious work, demotivating failures and absence of positive feedback. Based on their research finding at West Point Academy, strongly suggest that educators and parents must imbibe in their children such (emotional) stamina along with required academic skills so they would learn to cope with failures and adversities in their path to achievement.

Tough 2011, in an article in the New York times titled ‘What if the secret to success is failure?’ mentions how the construct of grit along with other character building constructs which include performance based constructs like – perseverance, self control and moral constructs like – being honest, helping others etc. have now become the prerogative of American Education. He quotes from the experiences and insights of Randolph, headmaster of a prestigious top tier private school which boasts of sending an impressive number of its students to Ivy League schools and is a Harvard alumnus himself. As stating that despite their obvious advantageous backgrounds and academic records, most students would not be able to reach the ‘deep level’ of success that positive psychology is talking about as they have not been exposed to failure. He strongly believes from his own life experiences that to lead a ‘happy, meaningful and productive life’ (Seligman, Peterson 2008), they needed to first learn ‘how to fail’.

While grit is understood as a complex personality trait it is not to be confused to a similar construct of resilience. The latter helps in circumventing adverse life circumstances to attain ‘normal’ life milestones while the former talks about consistency of interests and goals in spite of adverse circumstances.

Both constructs (Grit and Resilience) are therefore referring to a cluster of constructs and a description of context in their respective definition. They also have in common the construct of optimistic causal attributions (Seligman 1998, 2000, 2006, 2008) which features significantly in their respective clusters.

The rationale the current research is based upon is on the trend of research as quoted above that have, to a large extent, established the play of other factors that are not

cognitive ability related, effecting performance on tests that are intended to measure only cognitive performance. Not because of the validity of the tests but our limited understandings of learning and performance. Just as success is not the translation of ability, attention needs to be paid to the development of these other factors which more often than not are mediators in transformation of ability into performance.

Based on the premise that these ‘other factors’ cannot be measured by cognitive tests, though they affect the performance in such tests, are bracketed (even if erroneously) under the term ‘non-cognitive factors’.

Why must non-cognitive factors, be looked into and addressed?

Heckman 2001 draws comparisons between cognitive skills as measured by achievement tests and cognitive aptitudes that seem to play the decisive role in students’ academic achievement, almost exclusively.

In the face of several cases of high-IQ low performing individuals and low IQ high performing individuals, succeeding on the basis of persistence, reliability and self discipline. While the significance of such factors seem to be accepted and looked for outside academia, academic achievement still is largely considered as a function of cognitive skills. Heckman continues to elucidate and mention that reason for this could simply be the multiplicity of the non-cognitive factors.

While cognitive tests generally look for the one dominant factor ‘g’ (Heckman 2001), the non-cognitive factors seem to not fit into one neat model or one larger factor.

In more recent times researchers have unearthed several pools of such factors which according to the latest literature review by Farrington et.al. (2012c), fit into five categories namely: academic

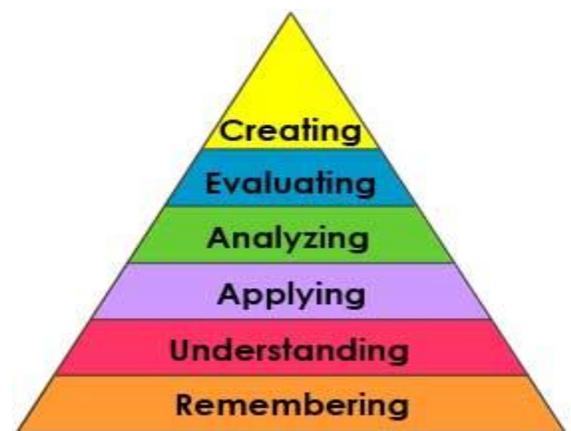


Figure 1.2: Bloom's taxonomy

behaviours, academic perseverance, academic mindsets, learning strategies and social skills. The literature review titled- 'Teaching adolescents to become learners: the role of non-cognitive factors in shaping school performance (June 2012)', cites several researchers- Conley, 2007; Farkas, 2003; Paris & Winograd, 1990, Ames & Archer, 1988; Bandura, 1997; Bandura & Schunk, 1981; Keith, Keith, Troutman, Bickley, Trivette, & Singh, 1993; Pintrich, 2000; Schunk & Hanson, 1985; Wentzel, 1991; Zimmerman, 1990 as considering academic performance to be a function of three distinct factors: content knowledge + core academic skills + noncognitive skills.

Content knowledge, as a term, straightforwardly means the material the student is being tested for in terms of proficiency. Again this seems like an over simplified term as content knowledge itself is proposed to be taught along a hierarchical grid. The most commonly used is Bloom's (1956) taxonomy as enumerated in Figure 2, again highlighting that mere content knowledge is a multilayered term requiring and utilizing more than just the 'semantic memory' of the relevant content. The rest of content knowledge would be tapping into skill sets not necessarily limited to academics namely problem solving, decision making, seeking resource, creativity, reasoning etc.

Though content knowledge is multifaceted, mainstream evaluative process is yet to match the philosophical paradigm underlying educational instruction. Core academic skills as specified in Farrington (2012d), have not been identified in the report but can be inferred based on the report as essential skills that are common across pedagogies like reading, writing, logical construction, strategizing. Both the categories require skills that are measured by governed by one dominant factor ('g') (Bowles, Gintis, 2001).

While no such single factor can be isolated to summarize the effects or cover the range of non-cognitive factors existing across both intra and inter personal domain, Bowles & Gintis 2001 mention perseverance, dependability, and consistency as most predictive of grades in school. Yet again, each of these constructs are considered as most reliable predictors of academic performance just like prior academic performance is a most significant predictor of future academic performance. But in case of prior academic

performance, it both fails to throw light on causal relationship and a probable interventional strategy.

Are these constructs merely the visible face of more decisive underlying constructs? The study mentions a few more like fear of failure, preference of challenge over affiliation, social participation and others. The result of this study needs to be carefully considered as the researchers had attempted to trace and filter out predictors from school success to vocational success. As mentioned earlier, it is a confounding task in itself to categorize such factors. While many can be slotted under intrapersonal category, their expression varies across contexts for an individual and can be believed to be maintained by interpersonal relations, like student- teacher/peer/parents etc. And many can be classified as ‘inherent traits’ rather than ‘can be developed skills’. As opposed to this, vague understanding, intelligence and aptitude are more definitely understood constructs, considered as ‘inherent skills’ which require a nurturing environment for their refined expression.

Highlighting the role of Non-cognitive factors

It seems rather ironic that academic achievement which has a blanket effect on a student’s life as explained earlier, is in itself steadily emerging as a by-product of factors that are non-academic in nature- Puttaraju 2012.

As research tried to explain why intelligence was not related to the differences in academic achievements, Garg & Rastogi 2009 asked the question – ‘whether intelligence quotient (IQ) is the only measure of success or some other factors play vital role in determining the success of students’.

They explored the factor of emotion and its effect on student’s academic performance. It was reasoned that students having a more competitive edge, experience more stress which impede their academic performance and other scholarly activities. Thus irrespective of their intellectual potentials, their academic performances were more

related to their abilities to manage the pressure or stress endured during the process of evaluation or learning.

Spence and Spence, 1966 talk about how students' involvement in cultivating rational intelligence required to give one the advantage in (the inevitable and persistent) academic competition results in stress that invariably leads to a physiological arousal that produces panic and inadvertently interferes with an individual's performance.

Additionally, Verma, Sharma and Larson 2002 noted, as students are required to be continually task-focused (required for consistent preparation) they experience stress which in turn interferes with cognitive processing and consequently inhibits learning and memory.

Besides, along with competitiveness and the continuous pressure of preparation as being the stressors, Malik & Balda (2006) correlated different types of stress- achievement stress, academic stress, social stress, institutional stress, financial stress, vocational stress as well as total mental stress in adolescents.

It is not surprising that they concluded that greater the stress exerted on the student, poorer was his/her performance. Their findings are in line with previous research attempts that demonstrated a similar negative relationship between academic achievement and psychological stress as reported by Ford (1993), Moore (1997) and Alatorre, Los Reyer (1999).

Academic underachievement

The process of learning in any context begins with 'I don't know' and is rife with many incidents which reinforce it. Thereby learning is usually a discomforting process. Now if such a discomfort is being played out in a non-private scenario (such as a classroom) wherein a student witnesses others (even if it is only one other) accomplishing the task faster and better, in spite of seemingly being a part of a 'uniform' group that all belong to. And the authority figure in charge of the task execution (teacher) seems to be more

favourable towards the accomplishing individuals and decides or considers their performance as the natural order of events and while considering you're not yet accomplished goals as not the natural order of event, expresses concern or even worse disapproval of your current (unaccomplished) condition. Your objectivity of the unaccomplished task leads to developing subjective associations (or labels like 'poor' or 'bad' student) to the current condition (of incomplete or failed task). The continuation of these unevaluated and often unknown subjective associations (derogatory labels) soon dictates task performance than potential. Therefore while addressing failure of accomplishment it becomes a prerogative to also address the subjective associations (labels).

Tapia (2002) states that the current education system defines academic failure as an inability of the student to pass with the minimum marks required for promotion to the next grade and irrespective of the consideration whether the student performs according to his or her potential. This conveys an understanding that most often, academic achievement of a student is considered as a reflection if not the measure of his/her 'potential'. It is no surprise then that a high academic achiever earns the title of a 'Good student' while a low achiever is often referred to as a 'Bad student'. This places additional stress on the student, who already dealing with the stress of 'learning' and 'performing' also anticipates the value labels added to 'not performing'.

Adults realize the need for assistance in coping with stress in different aspects of adulthood be it personal relationships, social expectations, professional commitments. While adults are given the luxury of identifying their stressors, students who also face stressors are hardly recognized as facing a stress, the general rationalization being – 'every child faces the same educational system and manages well enough'. Also academic stressors are not viewed as stressors, as parents and teachers repeatedly (question) tell their children that 'what other responsibilities do you have? You just need to study'. Taking away even the right from the student to identify academics as a stressor by labelling it as a 'necessity' and that it is for 'their own good' as they would be the sole beneficiaries of their hard work, not realizing that they just add additional

burden on the child if he/she is unable to fulfil this ‘sole criterion’ or even this ‘least expectation/responsibility’.

It does not come as a surprise then that, Verma, Sharma and Larson in 2002 in their study titled- School stress in India: Effects on time and daily emotions- spoke of negative emotions related to school work. Mentioned below are excerpts from the study – “Many adolescents in India are referred to hospital psychiatric units for school-related distress, exhibiting symptoms of depression, high anxiety, frequent school refusal, phobia, physical complaints, irritability, weeping spells, and decreased interest in school workFear of school failure is reinforced both by teachers and parents, resulting in children losing interest under too much school pressure. Another context of school stress is the time that children spend doing homework.”

Verma, Sharma & Larson 2002, emphasized how academic achievement itself can be a stressor. They spoke of how while seeking admission to highly competitive professional courses, the factor most considered was a previous history of good academic performance.

This, unfortunately, has rendered children to perceive examinations and the following results to be an indicator of their own worth. Success in examinations is generally viewed as a passage to a successful life and determining the very quality of future life- Puttaraju, 2012.

Failure in examinations is viewed as a catastrophe. It is common to hear parents and other well wishers often using the ‘well meaning – threat’ of the probable consequences of ‘not studying/ scoring well enough’.

These perceptions of the outside world and its grim realities acts as yet another stressor and only adds to the self created expectations and efforts to better one’s own previous performance and such combined pressure becomes difficult for the child to handle.

A student invariably suffers loss of self-esteem, feelings of ineffectiveness, anxiety, depression and suicidal tendencies before examinations. These emotional and behavioural disorders are estimated to affect up to 20% of school going children (Borich & Tombari, 1997). Added to these are the high parental aspirations and their overt disappointment at lower than expected performance leading to the compounding of stress on the child (Finalayson, 1971).

Malik & Balda 2006 who spoke about stress stated that –“A person under stress needs to fight the stress in order to survive. Adolescents whose minds are full of apprehensions are not free to use their energy and ability in achieving. There foremost priority is to nullify the effects of stress over their mind and they have to spend major part of their energy in this task. Hence a lot

of highly intelligent children who are under mental stress give poor performance in academics.”

“...When we educators fail to appreciate the importance of student emotion, we fail to appreciate a critical force in student learning...”
Yang & Damasio 2007

In view of the above Verma, Sharma & Larson 2002 thereby recommended that- “School education needs to strike a balance between learning and positive emotional experiences.” Being under stress brings in a fight or flight response, some students turn resilient and face the situation while others choose distractions to escape the building anxiety. Their emotional responses are not relatable to their intelligence or cognitive abilities rather they are reflective of ‘emotional stamina’ or ‘belief systems’ or ‘support systems’ available to the student, underlining the importance of factors other than academics affecting academic achievement.

Rimm 1995, defined academic underachievement as “Children with average, above-average, and even gifted intellectual abilities who are simply not performing up to their capabilities.” Reis and McCoach (2000), talk about the severe discrepancy between *expected achievement* (as measured by standardized achievement test scores or cognitive or intellectual ability assessments) and *actual achievement* (as measured by class grades

and teacher evaluations). Or more simply defined by Coil (2004) as a student not working up to his/her potential and often carry a remark in their report cards that reads 'You can do better'.

Reis and McCoach in 2002 classified student underachievers into three categories. First as the 'Rebel'- the student who demonstrates disruptive, delinquent, hostile, touchy, temperamental behaviours. Second, the 'Stressed Learner' or 'Perfectionist Pearl'- a student who displays anxious, perfectionist, worries about failure. Lastly there is the 'Complacent Learner' or 'Passive Paul', who procrastinates, gets easily distracted and seems unconcerned about work.

Reis and McCoach in 2002 also listed out the common characteristics of students who underachieve. Internalizing conditions like depression and anxiety, externalizing issues including rebellion and nonconformity, learning problems, deficits in self-regulation, social immaturity, dual exceptionalism (gifted with learning disorder) are often seen in underachievers.

Mandel and Marcus (1988) introduced six categories of underachievers (coasting, defiant, anxious, sad/depressed, identity search, and wheeler dealer) which were developed from their clinical work with underachievers and based on personality types found in the Diagnostic and Statistical Manual of Mental Disorders, Third Edition Revised (DSM III-R).

To sum the various theories explaining academic underachievement, the following are the observable characteristics in academic underachievement.

- Low self-confidence
- Use reading, TV, and video games as escapes from doing homework
- Inability to persevere
- Have creative ideas but they are rarely brought to closure
- 'School is boring'
- Disorganized

- Possible behavior/learning problems
- Low academic self-perceptions
- Low self-motivation
- Low effort toward academic tasks
- Negative attitudes toward school and teachers
- Daydream and dawdle
- Lack of goals
- Feelings of inferiority
- Avoid competition (unless they are sure to win)

This brings to light the presence of a section of students who, while in a regular classroom but who are not diagnosed for other conditions like learning disorders or behavioural problems, fail to translate their ability into academic performance.

As presented above, there are a wide range of feelings attached to failure to achieve in academics – disappointment, discouragement, fear, anger, the accompanying range of self –handicapping behaviours of procrastination, perfectionism, high distractibility, disorganized learning efforts, incomplete class work, misbehaviours, to mention a few.

"...teaching the student ...not the subject.." Anonymous

Yet academic underachievement is predominantly and popularly tackled with increased and structured academic training alone and the rest of the paraphernalia are looked at as secondary symptoms rather than the causes of academic underachievement itself.

The existing body of research on non-cognitive factors makes an irrefutable case for their role as the cause and therefore also the intervention for academic underachievement. Dweck et.al. 2011, makes a convincing case for the role of non-cognitive factors in academic achievement, stating that ample research in psychology and even economics have proven that the role of motivational or non-cognitive factors

play more often than not a ‘moderating’ role for ability to be translated into performance.

The researchers in their paper titled ‘Academic tenacity: Mindsets and skills that promote long term learning’ do not undermine the importance of curriculum, pedagogy oriented school learning but highlight the importance of psychology of the learner that is ostensibly sidelined in view of acquiring academic skills. Thereby compromising if not, aggravating the resistance to their objective of improving academic achievement.

By psychology, Dweck 2007, 2011 and colleagues mean the feelings, thoughts, belief systems that students associate with learning and other individuals who comprise the environment in which learning occurs. This psychology that Dweck 2007, 2011 refers to can be summed up in Bloom’s words in his 1976 seminal work titled ‘Human Characteristics and school learning’ - “...If we observe a group of students beginning a particular learning unit or task, we can note a great deal of variation in the affect with which they approach the task even before they receive any instruction on it. Some will approach it with evident interest and desire to learn the task Others regard it as a duty or requirement. Finally others approach the task with evident discomfort. They have some fear or trepidation and expect only negative things to ensue from this task and the judgments they expect from teachers, parents and peers....”

Bloom 1976 outlined three distinct groups of factors that contributed to academic achievement namely ‘quality of instruction of the teacher’, ‘student cognitive entry characteristics’ and ‘student affective entry characteristics’ The last category of student affective entry characteristics are what are now being referred to as non-cognitive factors or non-academic characteristics.

In regard to the construct of academic tenacity, Dweck et.al 2011 attempts to sum up the plethora of factors that fall under this category. This is comparable to physical immunity that protects the body’s susceptibility against less than favourable circumstances so the body could function to its optimum. This does not mean that the physical body does not

fall ill but it only means it reduces the chances or frequency of falling ill or increases the threshold at which the body succumbs to illness.

Academic tenacity similar to Duckworth's (2007) construct of 'grit' could also contribute to (emotional) stamina needed to sustain long term learning despite unfavourable feedback. While grit is viewed as, a personality trait isolated in accomplished individuals, academic tenacity, on the other hand consists of several groups of factors, some inherent in the individual, some cultivated in the interpersonal context and some specific to learning strategies that can be learnt and developed upon.

Though the construct of academic tenacity includes several non-cognitive factors and stands on the support of several intervention programs some of which are independent of and some synchronized with curriculum and learning material. Dweck 2007, 2011 and colleagues do not present how these factors work in tandem with each other. The factors spoken about are roughly segregated into two categories: Student-centric and embedded in the context of interpersonal relationships and learning processes.

As can be seen this categorization is not like distinct water tight compartments but rather like two over lapping Venn diagrams. What confounds the process further is that the intervention programs designed do not strictly work in the area of influence of the construct but rather use an alternate construct as the route to reach target construct. For example one of the intervention programs targeted towards developing growth mindset used teachers' praising student effort as opposed to student result/performance, thereby using an interpersonal context to nurture a student-centric construct of mindset. The intervention programs that Dweck and colleagues based their work upon are can be placed under two broad categories. While some of the programs are independent of the learning curriculum like training to develop life skills, stress management and goal-setting skills, other programs are synchronized to the learning curriculum through the process of providing cognitive and motivational scaffolding.

An attempt to organize the numerous non-cognitive factors into a simple frame work was made by Farrington 2012. First they established five distinct categories, the first being Academic behaviours. These are the set of visible behaviours that are associated with a academic high achiever. All non-cognitive factors are said to effect academic achievement through these skills of outward practices.

The second set is referred to as Academic perseverance. They are the factors that empower a student to persist on a task in spite of its tediousness, to focus on long term goals by giving up on readily available distractions i.e. in other words they stay on track when it is most difficult to do so.

The third set of factors are termed Academic mindsets. These are the beliefs, psycho-social attitudes or simply understandings of abilities in the academic context. For example intelligence, significance of learning over performance etc that moderate the individuals persistence and sustain academic behaviours.

The fourth set of factors are referred to as learning strategies. These skills are more intertwined with the learning process. They could either constitute general study skills that determine performance or domain specific skills to master pedagogies.

The last and the fifth set of factors are bracketed under the term social skills. As education is embedded in a rich interpersonal context, these people skills create a congenial environment, conducive for learning to take place.

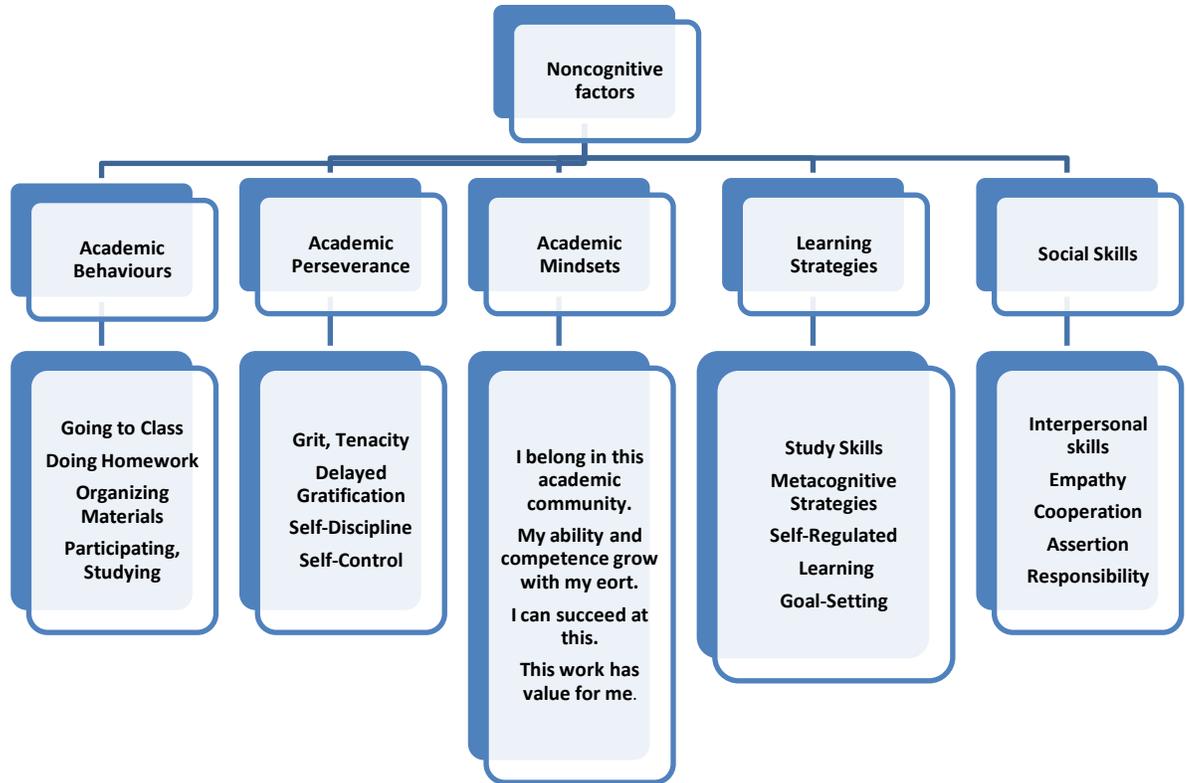


Figure 1.3: Farrington et.al. 2012 -Categorization of non-cognitive factors (termed in the current research as non-academic cognitive factors).

The above five distinct categories have been placed in a simple framework as shown below to achieve the minimal level of organization (placing the constructs in an order of their cause effect relationship) and not claim to demonstrate the actual working of these constructs.

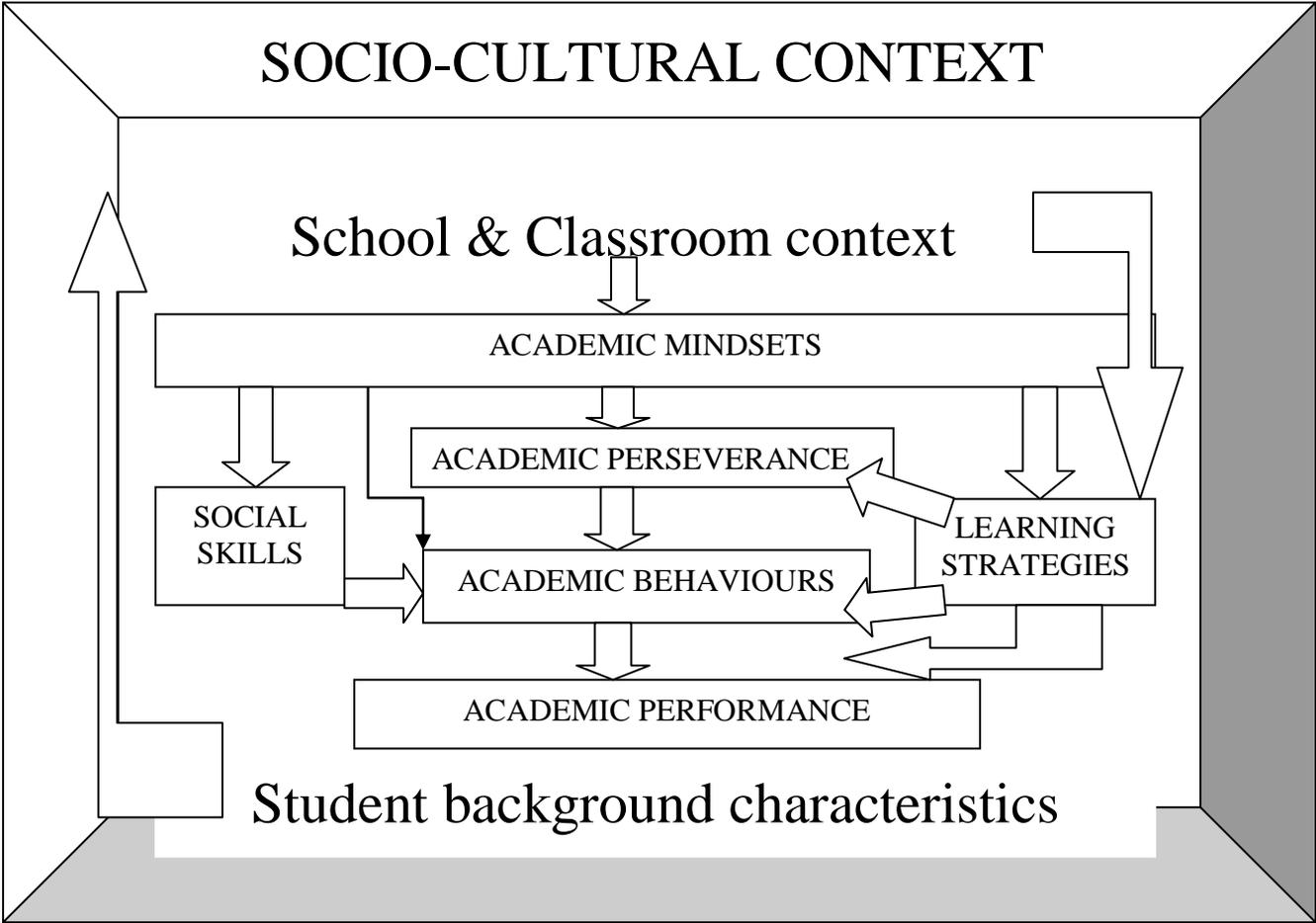
The five categories play out in a three layered contexts the largest of them being the Socio-cultural context that is inclusive of the microcosm (subjective) experience of individuals to the macrocosm of larger socio-politico-economic factors beyond the scope of any intervention program.

The next layer of context is student background characteristics that would mean the academic identity of the student till date along with the non-academic factors like demographic variables specific to the individual.

The last layer in this embedded context proximal to the working of the mentioned constructs is school and classroom. This context in itself comprises of several factors like from formal and general school policies, to availability of resources, to the orientation of peer and student interaction with regard to academic tasks etc.

The actual five distinct categories interact in the embedded structure as depicted in the diagram below.

Figure 1.4: The interplay of the five non-cognitive factors embedded in the microcosmic and macrocosmic situational context.



Suggested change in terminologies

Up until now the term non-cognitive factors have been used to refer to the skill sets that cannot be tucked into the category of cognitive factors (intelligence, aptitude) both of which have been found to influence academic achievement. The researcher proposes to rename the two terminologies, based on the rationale of ‘few aspects of human behaviour are devoid of cognition’ (Borghans, Duckworth, Heckman, Weel 2008), instead as academic cognitive factors and non-academic cognitive factors.

Wechsler (1940) suggested the term “non-intellective” to refer to collective factors which according to him contributed to intelligent behaviour. This term too seems unsuitable as they seem to denote that the factors being referred to do not require ‘intelligence’. Whereas the intention was to, refer to a significant aspect or component of ‘intelligent behaviour’.

The term Academic cognitive factors refers to intelligence, memory, reasoning, problem solving, as well as cognitive factors as delineated in literature review by Farrington 2012d, to include the “content” focused upon in school, particularly a student’s grasp of content knowledge and academic skills such as writing and problem-solving. Though the review excludes from the definition the students ‘capacity’ to learn, namely intelligence, memory, attention, learning strategies, these also have been grouped by the researcher to be collectively referred to as Academic cognitive factors.

On the other hand non-academic cognitive factors seeks to refer to what until now have been slotted under the aegis of non-cognitive factors (Farrington 2012e), as enumerated in Fig. 3 given above. Though the researcher does not propose to study all the mentioned factors but a selection and an addition of constructs not covered by the review namely Explanatory style (Seligman 1982), Mindset (Dweck 2006), Metacognitive awareness (Schraw, Dennison 1994), frustration tolerance (Bernard, Cronan 1999) and Empathy (as perceived by the student from peers and teachers).

These diverse factors ranging from student's attitudes towards learning, to their conceptions of intelligence and their ability to regulate their learning related behaviours. Also it includes students' quality of relationship with peers and teachers who comprise a significant component of their learning experience have an indelible but ill understood effect on the emotional climate created around learning itself and thereby affects academic performance.

These (non-academic cognitive factors) socio-emotional factors were first coined by economists, who were attempting to understand individual abilities that determined / influenced productivity. They were termed (as non-cognitive factors) based on the premise that they were un-testable by cognitive tests like IQ tests or academic examinations but nonetheless effect the performance on both.

Researchers have come to realize the erroneous implication of the term as Borghans et.al. 2008 state- "creates the potential for much confusion because few aspects of human behavior are devoid of cognition." The upcoming theories of Seligman 2007, 2011 and Dweck 2007, 2011 under the aegis of positive psychology talk about factors affecting performance even academic performance, as being cognitive in nature. While Seligman 2007, mentions them as irrational beliefs (founded in the work of Cognitive therapies, in particular REBT – Rational Emotive Behaviour Therapy) and Dweck 2007, refers to them as mindsets, they are basically referring to underlying thought patterns (and therefore cognition) that are governing the explicit behaviours.

Therefore the need to, change the terminology from non-cognitive factors to non-academic cognitive factors. The researcher in this study proposes the term non-academic cognitive factors to refer to the factors that fall also under social/interpersonal realms (e.g. quality of relationship with peers and teachers) and expands to include factors namely attitudes towards learning, perseverance, understandings of intelligence et al.

Adolescence

The focus population of the current research is adolescence in particular late adolescence (16-17 yr olds), for reasons described in the following paragraphs.

Adolescence as a developmental period is often referred to as a time of ‘storm and stress’, increased rates of suicide, accidental deaths and affective disorders which are often attributed to intense and frequent negative affect experienced during this time (Casey et al 2007)

United Nations Population Fund (UNFPA), India chapter in their situational analysis of adolescence of India defined the term adolescence as “to emerge” or “achieve identity” especially with relevance to the domain of thinking.

World Health Organization (WHO) discerns adolescence along two parameters, one of age (10yrs-19 yrs) and other of ‘specific attributes’ namely: Rapid physical growth and development; Physical, social and psychological maturity; sexual maturity and onset of sexual activity, experimentation, development of adult mental processes and adult identity and finally transition from total socio-economic dependence to relative independence.

National Council of Educational Research and Training (NCERT), distinguishes three stages of adolescence. Early adolescence (9-13yrs old), witnesses a growth spurt accompanied by the development of secondary sexual characteristics. Mid adolescence (14-15yrs) initiates a separation of identity from parents, establishing relationships with peer groups, the opposite sex and involve in experimentation. And by late adolescence (16-19yrs), individuals have fully developed physical characteristics much like adults are presumed to have formed distinct identities, opinions and ideas. The NCERT paints a rather ideal picture of adolescence in this bird’s eye- view depiction.

A more detailed description has been attempted Yergulun-Todd 2007, who provide brief account of the above mentioned changes with its many physiological, cognitive, social,

emotional correlates as: “Adolescence is a critical period for maturation of neurobiological processes that underlie higher cognitive functions and social and emotional behavior.... The prefrontal cortex matures later than other regions and its development is paralleled by increased abilities in abstract reasoning, attentional shifting, response inhibition and processing speed. Changes in emotional capacity...are also seen during adolescence...In summary, brain regions that underlie attention, reward evaluation, affective discrimination, response inhibition and goal-directed behavior undergo structural and functional re-organization throughout late childhood and early adulthood”

Based on the above research findings Farrington et al 2012g, in their literature on ‘Teaching adolescents to become learners: The role of non-cognitive factors in shaping school performance’ propose that during adolescence there is irrefutable change in the manner that brain processes information.

These changes are also reflected, in their overt behaviours. The first of the changes is that adolescents become much more conscious of how others perceive and think about them. These perceptions are now used to form their views on their identities.

The second significant offshoot of adolescence is the ability to exercise decision-making skills and control their environments. They are now in charge of many areas of their life independently, making choices, understanding and framing their motivations, coping with their circumstances, there by significantly molding their behaviours.

“Adolescence represents an inner emotional upheaval, a struggle between the eternal human wish to cling to the past and the equally powerful wish to get on with the future”
- Louise J. Kaplan.

Finally the above two abilities of abstract thought and self assessment decides their involvement in various activities based on their feelings of competence, value assigned to the task on a short term and a long term basis and their belongingness in a specialized group.

Adolescents learn to tell the difference between potential and hard work based on self and others' assessments of their performance. Covington, 1984 proposed that this distinction between 'ability and effort' could sometimes lead to erroneous opinions, where the increase in effort or the perceived difficulty of the task could be attributed to ability of lack of it.

In the context of academics, in terms of the beliefs the adolescent nurtures about his or her ability in this scenario, intelligence (Dweck 2000) shares an inverse relationship with hard work. Combined with this is the social vulnerability, an attempt to discover/assess/develop self efficacy and the ability to manipulate environments decides whether the adolescent in a bid to 'not look dumb' in a classroom setting cultivates behavior strategies to avoid failure like putting down challenging tasks, withdrawing effort and several self handicapping behaviours like procrastination, perfectionism to name a few (Farrington 2012h).

India has the largest population of adolescents in the world being home to 243 million individuals aged 10-19 years¹. This developmental stage accounts for 22.8% of Indian Population. According to S.Kumar 2007, survey report titled "A survey on the road blocks to holistic development in adolescents", state that adolescence is the final frontier for any long term behavioural patterns to be nurtured. The report states that habits cultivated in this stage with reference to both external object focused tangible behaviours like substance abuse, eating habits to intangible or relationship focused behaviours like conflict resolution styles, communication patterns with authoritative figures like parents are usually immune to interventions when focused upon in future developmental stages. Hawkins et al 2008, have traced that an individual's socioeconomic attainment in their late twenties can be predicted from their mental status recorded in their late adolescence.

In the state of Karnataka many students after the completion of Grade 10 either continue in their schools for Grade 11 and 12 if their school follows a syllabus format that

¹ Source Hindustan times Feb 2011

included the two grades. While all of state syllabus following students and students who chose to not continue in their schools for Grades 11 and 12, seek admission to Pre-University colleges. Most of these students who chose to pursue the PUC syllabus now transition from their cloistered school atmospheres of high frequency teacher student interaction, increased parent engagement, highly regulated and supervised environments to expansive, less regulated and not strenuously supervised college atmosphere.

The college atmosphere relies more on student's ability to independently manage their academic behaviours, as teachers either intentionally or due to large numbers (an average of 75 upwards class strength) do not 'hand hold' the student. Teachers believe that by this developmental period student must be in a position to regulate their academic behaviours and simply believe that if students face the consequences of their own academic behaviours or the lack of it, they will begin to shoulder their academic responsibility. Some students are unable to regulate their academic behaviours and their mismanagement leads to immediate unpleasant consequence of low grades, which the teachers often believe are enough of a lesson to 'turn them around' and make help them realize the 'gravity of the situation'. The low grades act like a de-motivator for the student, who most often are aware of their mismanagement of academic behaviours and feel helpless in their ability to manage them better. Students feel overwhelmed by their academic demands and unclear expectations academic and otherwise. Teachers feel frustrated with student's obvious lack of efforts attributing it to their lack of 'seriousness' and get punitive in their attitude towards students. Further alienating them in this transition phase.

In the Indian educational scenario, late adolescents are heading towards their second educational milestone. The first one being their tenth grade board exams the results of which would have directed them into one of the three broad streams of education namely: Science, Commerce and the Arts.

The second academic milestone is more applicable to the students of Science, their performance at the 12th grade board exams would decide whether they are now

admissible to elusive 'professional' careers of medicine or engineering or they pursue the less popular choice (as they are misconceived by many as less promising) of a general degree in Science with few specialization courses in Biotechnology, Microbiology, Biogenetics, Computer applications et al, which often require an advanced Masters course in their respective specializations to become promising prospects for a career in their respective fields.

Class 11th and 12th are collectively called as Pre University Education in Karnataka. The board governs all the colleges, which offers Pre University Education. The functions of the board are to conduct PU examination, to prescribe the curriculum and textbooks. II PUC is a State level Examination. The board conducts three tests for PUC I and II every year. The annual report of the Pre-University board (Karnataka) 2010 reads that the pass percentage of the combined three streams since 2000 has averaged around 46%. For the year 2010 the pass percentage has been 49% . The pass percentage increases for freshers (students attempting the examination for the first time) to 61.94%. And when looked to three broad streams the highest pass percentage is around 71.41% in Commerce, a dip to 66.84 % in Science and further decreases to 53.24% in Arts. Of the six lakh odd students who appear for this exam state wide (across all the three streams of Science, Commerce and Arts) only half of them manage to clear it.

This is merely the pass percentage that is the number of students who have met the minimal requirement of marks for the examination. To qualify for the various competitive examinations students require an aggregated percentage of 50 for medicine and dental undergraduate courses and 45% for engineering and architecture courses. The report does not mention the number of students who clear this bench mark.

There is no survey or statistics that indicate the average number of competitive examinations a student of II PUC has to face for entrance into a 'professional' course. In the state of Karnataka a science stream student interested in taking up one of the 'professional' courses, appears for two state level entrance examinations to better their chances for admission besides the annual II PU board examination. To this list one can

also add National level entrance tests for premiere institutes, other state level entrance exams for admission to private institutions. A medical aspirant attempts 4-5 entrance examinations, while an engineering aspirant attempts 3-4 such examinations at all the three levels of national, state and private.

Though the common inference of the above scenario suggests that opportunities to write many entrance examinations would mean many aspiring students realize their dreams. Across the country, over 4 lakh students compete for 35,000 undergraduate seats in medicine annually. There are a total of 17 entrance tests for admission to medical colleges in the country, conducted by various bodies including the CBSE, the state governments and some private institutes². Similarly, over 10 lakh students appear for 150 entrance tests conducted by various state boards and institutions, including the IITs³. Though the scenario on the surface looks easier for engineering, the popularity of some branches over others in view of better scope, the questionable status of some of the colleges makes the actual list of favourable seats shorter and every year a sizeable chunk of these seats goes vacant⁴.

The popularity of these ‘professional’ courses can be effectively gauged based on the many dime dozen tutorials which have mushroomed across the city to prepare students for these examinations. What takes the cake is that an admission into, some these most sought after tutorials themselves require an entrance exam or a high cut off (based on grade 10 scores) or both. Some (postal) tutorials begin classes from as early as 8th or 9th grades, while the majority hold almost daily classes with extra hours on holidays either early morning or late evening hours before and after regular college hours. A few of the tutorials are either run or boosts of former IITians (alumnus of the very premier institute of Engineering IIT) as faculty on board, indicating the relevance of their training. The tutorials run classes between 2-4 hours with their own scheduled tests and examinations. So a pre-university student in the science stream with combination of Physics, Chemistry, Biology and Mathematics (PCMB), on a daily basis spends 5-6 hrs in college

² Source Times of India May 2011

³ ibid

⁴ Source The Hindu Oct 2012

with another 2-4 hours at tutorials and 2-3 hours at home in self study. Which totals up to 9-13 hours of academic work every day.

The time the student is now left with for self, family or friends or anything non-academic is a matter of simple math and common sense. Families (parents) talk with pride and teachers endorse the idea of 'sacrifice' of these two precious years so students can 'enjoy' the rest of their lives. It is a matter of concern whether what is being 'sacrificed' is just time. Also what happens when this 'sacrifice' fails to pay off? The increase in anxiety and depression disorders and suicide attempts during this period can be gauged by the increased media coverage to the matter in the time leading up to the exams and thereafter at the announcement of results.

Counselling helplines, discussion forums, counselling skills training for teachers and study skills, stress management skills etc based training for students to enable them to handle the examination stress happen around the focal point of examination. This is more like trying to learn to swim when drowning. What perhaps is needed is a long term program which empowers students in their classroom scenarios so they tap into the social support of their peers and other coping resources and develop a robust mental health that tides stormy waters. Though this could lead to an ideological debate of whether this validates and may even encourage the distortion of the current circumstances. On the contrary such a mental health program would empower the students to look beyond the very circumstances and enable them to charter newer courses in case of unfavourable results. Because unlike the tutorials that prepare for examination, any mental health focused training do not come with a rigid shelf life or with restrictive application.

From the current academic year (2012-13) Karnataka Pre-University would follow the CBSE syllabus instead of the former state syllabus, this change has been done with the objective that it will empower Pre-University students to be better able to compete at

National level competitive exams⁵. So the current year of students who are the focus of the research would be the first batch to face a paradigm shift.

The research trend and the circumstances strongly suggests the importance of inculcating resilient mind habits at this decisive developmental stage, considering the long lasting effects otherwise, considering the intensity of the situation the population is required to face.

There is more to Academic performance, especially when measured by test scores, than can be credited to cognitive abilities. This highlights the role of non-academic cognitive factors which mainly fall in the intrapersonal domain like optimism, mindset, fear of failure, curiosity, grit etal. These are new domains waiting to be explored. Such an exploration will unearth constructs that probably require as much training in as academic pedagogies, to enable a student as James 1907 stated, "... ,trained to their most useful pitch of energy".

The line of questioning that arises next would be to better understand the versatility which encompasses the non-academic related cognitive factors and whether these factors can be cultivated if necessary. The very variety of factors that fall under the aegis of non-academic cognitive factors, deem it necessary to be better understood. Is there one major factor or are there clusters of important factors that are interrelated in a fixed pattern. Which of these constructs form the nodal centre, so the limited resources can be focused on it to reap maximum impact. The next chapter is an attempt in the above stated direction.

⁵ Source The Times of India Dec 2011