



# Motivation Strategies for Academically Low-Progress Learners

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# **Motivation Strategies for Academically Low-Progress Learners**

*Nadira Talib, Roberto de Roock*

## **Abstract**

Low academic achievement can threaten educational and social equity. Using the lens of self-determination theory, we discuss how supportive learning environments that satisfy the needs for competence, relatedness, and autonomy can help low-progress learners enhance self-regulatory skills (i.e., metacognition) and become more fully immersed in the learning process. We identify ways in which teachers' deficit thinking of low-progress learners can hamper the uptake of pedagogical approaches necessary to satisfy these needs. We close with recommendations for school and classroom practice that could satisfy students' basic psychological needs and enable them to progress academically.

## **Introduction**

Singapore's meritocratic educational system strives for "equal opportunities for each student to learn and to achieve his or her potential" (Wong, 2000, n.p.). Despite this provision of equal opportunities, Singapore does have students who do not perform well academically. Low achievement, if not addressed at a systematic level, threatens educational and social equity (Darling-Hammond & Berry, 1999; Nicholls, 1979). This paper considers optimising the role of structural and enabling conditions to support motivational strategies for low-progress learners, and argues that motivation needs to be developed and sustained at the institutional level. Rather than viewing the low-progress learner as the locus of the problem, which entails deficit thinking<sup>1</sup> (Valencia, 2010), taking a pedagogical approach enlarges the scope of the problem to examine the interdependence

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<sup>1</sup>Valencia argues that deficit thinking operates on an unsubstantiated assumption that inherent abnormalities such as limited intellectual abilities, low motivation, and linguistic shortcomings are the source of academic failure among low socioeconomic students. Rather than relying on this "blaming the victim" thesis to explain educational malaise, Valencia observes that systemic factors, such as inequities in basic school resources, have a strong relationship with the academic failure of low SES students (Garcia-Perez, 2012, pp. 278–279).

between the learner and the learner's environment. This approach moves the issue from learner-as-problem to classroom-pedagogy-as-problem in order to identify and locate discrepancies embedded in the day-to-day practices of schools that may hamper learner engagement.

This paper draws on Martin's (2018, p.30) definition of motivation as "individuals' energy, inclination, interest, and drive to learn, work effectively and achieve to potential" and engagement as "the behaviours aligned with or following from this energy, inclination, interest, and drive". As such, this paper attempts to examine factors that drive and energise students' behaviour and *desire* to learn (Liu, Woon, & Ryan, 2016). These factors involve classroom pedagogy, which refers to instruction that facilitates students' effective functioning (Good & Marshall, 1984). Significantly, pedagogy is highly influenced by the structures of the learning environment (Good & Marshall, 1984). It is hoped that the literature in this paper will help transform how low-progress learners are viewed—not as problems to be solved, but as potentials to be fulfilled. Educational efforts discussed in this paper thus focus on developing the student's personal capacity with the aim of cultivating self-regulated learning in which learners can get more fully immersed in the learning process (Reeve, Deci, & Ryan, 2004). Specifically, we propose that these efforts should be directed towards modifying the environment to afford opportunities to learn (Wehmeyer, 2014).

This paper is organised into six sections. We start Section 1 by conceptualising the notion of low-progress learners as a symptom of unfavourable conditions and conditioning, particularly in Singapore's context. To address conditions that undermine students' motivation, Section 2 summarises different approaches to cultivate students' motivation, and describes the self-determination theory (SDT) that offers possible underpinning principles for this purpose. Using this lens, we discuss how low-performing learners may benefit from a learning environment that satisfies the need for competence, relatedness and autonomy. As Teo (2018) reports, "low motivation" is reproduced through a tracking system which labels students as "slow" from a young age and place them under contextual conditions that shape particular undesirable learning behaviours. To overcome this

conditioning, this paper is concerned with understanding how contexts can be modified through increasing the support that the school and teachers can provide to their students.

We then draw on the principles of SDT to contextualise the local research findings of Singapore's National Institute of Education (NIE) projects in Section 3. In Section 4, we discuss particular strategies on motivation that teachers may adopt to help low progress learners. Section 5 offers recommendations for schools to build and sustain a culture and environment that promotes autonomy for teachers and students. Finally, in Section 6 we conclude by emphasising the need to view strategies to enhance motivation as interrelated and interdependent, just as the three needs of autonomy, competence and relatedness are interrelated and interdependent.

## **Section 1: Contextualising the Notion of “Low-Progress” Learners in Singapore**

For the purpose of this paper, the terms “low-progress”, “low-achieving” and “at-risk” learners are used synonymously as they are all related to educational under-attainment, determined generally through standardised test scores (Siti Hajar, 2012). In Singapore's context, this refers to students in the Learning Support Programme (LSP) or Learning Support for Mathematics (LSM) in primary school, or in the Normal course (Normal Technical and Normal Academic) in secondary school. The LSP is an English language support programme introduced in 1992 to help lower primary school students (grades 1–2) who are weak in the English language. A corresponding programme for Mathematics, LSM, was introduced in 2006. Students who are in the Normal Technical (NT) stream in secondary school (grades 7–10) form about 15–20% of the lowest scorers nationwide. Unlike students in the Express and Normal Academic (NA) streams who sit for the Singapore-Cambridge GCE “O” Level examinations at the end of their secondary school life, the NT stream students sit for a separate examination (“N” Levels) which prepares them for a technical education. The NA stream students are given four years to prepare for the “N” Levels followed by an additional year to prepare for “O” Levels, while the Express students sit for the “O” Levels after 4 years.

Ismail & Tan (2005) categorise NT students in the “at-risk” group as they are ranked in the lowest stream in the educational system of Singapore. Students in the lower track are often assumed to behave poorly, have low motivation and self-esteem, have poor study habits, and be unable to think critically or innovatively (Ismail & Tan, 2005, 2006; Teo, 2017). This paper posits that the identity of “at-risk” imputed by this label should not be confused with permanent inherent qualities of students with the assumption that they possess intrinsic<sup>2\*\*</sup>, deterministic characteristics that are unchanging and unadaptive, but more as a result of environmental conditions which encompass pedagogical, curricular, and structural issues both within and outside of school. That is, as Ismail and Tan (2005) argue, students are *placed* “at risk” when the environmental conditions that espouse to “cater to learners’ ability” fail to satisfy their needs. Low-achieving here is thus framed not as a defect within a person but the polarisation between the person’s potential and the demands of the contextual conditions (Wehmeyer, 2014). Even though intervention programmes<sup>3\*\*\*</sup> can be useful, and the role of the home situation or out-of-school environment (see Wang et al., 2014 for engagement of community and family as stakeholders) must not be ignored in understanding the level of student engagement, it is not the focus of this working paper which sees the school as a major opportunity to foster both teacher and student autonomous motivation by improving institutional and pedagogical practices (Deci & Ryan, 2016).

### ***The Need to Dismantle Deficit Thinking to Support MOE’s TSLN Initiative***

The launch of the Thinking School Learning Nation (TSLN) initiative in Singapore in 1997 puts more focus on developing student-centred

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<sup>2</sup>It is important to note that the terms “intrinsic” and “extrinsic”, “growth”, and “fixed” mindsets used within this paper are not constituted as a dichotomy. They are interrelated and permeable. In this sense, rather than viewing them as dichotomous and dualistic, ‘intrinsic’ factors interact with ‘extrinsic’ or contextual motivational variables to optimise academic motivation (Hidi & Harackiewicz, 2000; Niemiec & Ryan, 2009). The focus is not on these dichotomous motivational variables as pre-existing phenomena, but on the *conditions of existence* that enable them to interact optimally so as to produce and sustain motivation for autonomous self-regulatory learning.

<sup>3</sup>According to Siti Hajar (2012), programs to stem the attrition rate have included strengthening student engagement in schools through co-curricular activities, enhancing guidance, and support. The support system allows students time off from regular classes to address their personal issues and cultivate coping strategies with counsellors to assist their return to school.

learning environments that require teachers to view knowledge claims as “*uncertain*” or “*unconditioned*” (Chai & Khine, 2008, pp. 287–288). Despite recent policy calls for more student-driven and exploratory learning to occur to develop students as producers rather than consumers of knowledge (Heng & Atencio, 2016), the success of MOE’s TSLN educational initiative could be compromised due to the epistemological and pedagogical beliefs (which are about how knowledge and knowing should be cultivated in schools) that teachers hold (Chai & Khine, 2008). It would be difficult to attempt to change students’ motivational levels as a means to achieve academic engagement without first understanding how teachers’ pedagogical beliefs would facilitate or hamper learner engagement (Liang & Dixon, 2011).

Generally, teachers who adopt teacher-centred and content-focused perspectives are more inclined to adopt didactic teaching practices and treat knowledge as unproblematic validated facts to be transmitted to passive recipients (Chai & Khine, 2008). Specific to the NT stream, Albright (2006) found that teachers educate children to conform and take knowledge as self-evident truth rather than enquire. Gorski (2013) argues that although *some* direct instruction or skills-and-drills pedagogies can be helpful to learners who are attempting to acquire basic skills or knowledge, an overemphasis on direct instruction can hamper opportunities for learners to learn deeply and comprehensively, as it encourages the functioning of a habit that privileges conventional thinking and can further alienate unmotivated students.

The problem of this form of traditional teaching can be exacerbated for Normal Course students (NA and NT students) where student placement in lower ability groups is associated with low teacher expectations and low amounts of learning (Heng & Atencio, 2016; Yip, 2001). Singapore teachers’ beliefs about the fixed nature of their students’ academic abilities have been found to be linked to the streams in which students are placed, that is, whether they are “Express”, “Normal Academic” or “Normal Technical” students (Anderson, 2015; Liang and Dixon, 2011). In an interview to uncover teachers’ views and beliefs regarding their teaching in the NT programme, teachers described NT students as “having low intellectual ability in that they cannot think on their own and need help with thinking

and analysis” and “believed that low-level tasks were adequate for NT students as most of them would not be in jobs that would require higher order thinking” (Heng & Atencio, 2016, pp. 6 & 8). Consequently, lessons for NT students were highly structured with few opportunities for student collaboration and discussion. Dweck (2014)’s research shows that educators who have been structurally conditioned as such tend to develop fixed mind-sets and engage in ability grouping which facilitates self-fulfilling prophecies. That is, students who are perceived to have low intelligence remain low achievers in their classroom. This belief is reinforced when efforts to enable weak learners to succeed by giving them easier options (such as foundation subjects in primary schools wherein subject content is learnt at a basic, foundational level) place limitations on the extent to which both the teachers and NT learners can aspire (Gopinathan, 2015).

In order to help teachers overcome the effects (primarily the strengthening of deficit thinking) of destructive structural conditioning and form a growth mind-set, teachers need to be given opportunities to critically analyze and challenge their deeply entrenched deficit beliefs about low-progress students. The deconstruction of deficit thinking is crucial in order that teachers may avoid controlling forms of teaching and build possibilities to explore, uncover and develop their students’ academic potential (Heng & Atencio, 2016; Liu, Wang, & Ryan, 2016). These opportunities could be created through adopting motivational strategies that focus on the importance of creating environmental conditions to engender a growth mind-set classroom (Dweck, 2014; Wehmeyer, 2014). From the self-determination theory (SDT) perspective, rather than controlling behaviours, an autonomy-supportive environment facilitates more self-determined forms of motivation in students (Wang et al., 2016). We argue that an exclusive preoccupation with building teaching capacity without examining contextual circumstances neglects the importance of how these circumstances and an individual’s capacity for teaching and learning are interrelated. Within a seemingly deficit paradigm, this is an essential starting point for pedagogical innovation, necessary not only to motivate both teachers and students, but also to realise the more robust learning outcomes advocated by policy statements and to create an ethic of care (Heng & Atencio, 2016).

## Section 2: Creating Better Learning Contexts for Children

Focusing on the development of intrinsic motivation is important within the context of low-progress learners who have been demonstrated to be low in self-regulation (Tan et al., 2008; VanZile-Tamsen & Livingstone, 1999). Students with intrinsic motivation are more likely to engage in the task willingly as well as exert effort to improve their skills and competence (Wigfield et al., 2010). A constructivist-oriented classroom teaching (Chai & Khine, 2008) can develop students as producers rather than consumers of knowledge (Heng & Atencio, 2016). This opportunity to see students as knowledge creators could help address what Liang and Dixon (2011) refer to as teachers' beliefs in the fixed nature of lower-achieving students' ability and deficit thinking of lower-achieving learners as a *consequence* of student placement.

Motivation is a theoretical construct used to describe the reasons for people's actions, desires and needs. Within education, perspectives on motivation tend to be social-cognitive, emphasising the individual student's self-perceptions as embedded within a social context (Lazowski & Hulleman, 2016). This includes theories focusing on achievement motives and needs (Deci & Ryan, 1985), perceived ability and self-concept (Marsh & Shavelson, 1985), perceived value for and interest in an activity (Eccles et al., 1983; Hidi & Renninger, 2006), the relationship between goals and motivation (Gollwitzer, 1999; Nicholls, 1984), the influence of attributions about success and failure on motivation (Weiner, 1980), emotions (Pekrun, 2006), and potential future identities (Markus & Nurius, 1986).

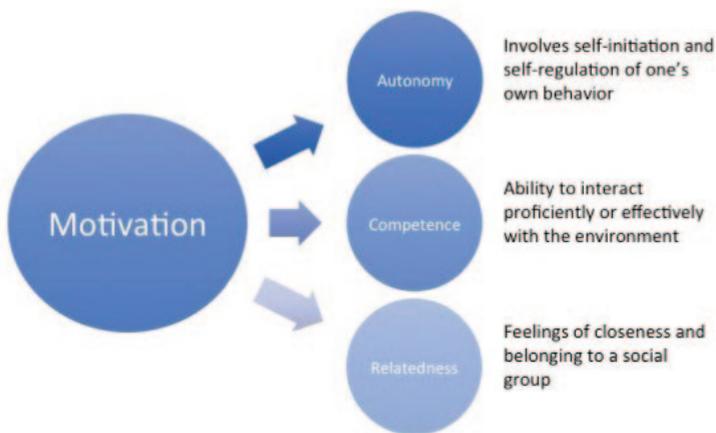
As it is beyond the scope of this paper to summarise or synthesise these approaches, we adopt the social-cognitive approach of self-determination theory (SDT). SDT addresses how psychological processes are in an organic relationship with events and social context (Sheldon & Ryan, 2011). It integrates a range of theoretical perspectives unified by the conviction that enabling environmental conditions can enhance motivation. That is, SDT conceives desirable traits and wellness as a *consequence* of supportive conditions rather than as inherent characteristics of human nature. The assumption here is that activity and optimal development do not happen automatically,

and actualisation of the human potential requires necessary nutriments from the social environment (Deci & Vansteenkiste, 2004).

### ***Self-Determination Theory: Basic Needs and Intrinsic Motivation***

The self-determination theory (SDT) argues that optimal human functioning can be achieved under the condition that three fundamental needs of competence, relatedness and autonomy are successfully satisfied (Deci & Ryan, 2000; Deci & Vansteenkiste, 2004). SDT emphasises the important role that governing one's own fate or course of action plays in a person's positive functioning and social adjustment (Ryan & Deci, 2000; 2002). It is formulated based on an interpretation of various empirical results using both field studies and clinical trials as a basis for explaining the interaction between the social environment and autonomous or intrinsic motivation (Deci et al. 2001; Deci & Ryan, 2012; Deci & Vansteenkiste, 2004; Chirkov & Ryan, 2001; Lynch et al., 2009; Niemiec & Ryan, 2009).

Deci and Ryan (2015) highlight that intrinsic motivation and effective functioning are enhanced when three fundamental psychological needs for competence, relatedness and autonomy are satisfied (refer to Figure 1 for definitions of the three needs). According to Ryan & Deci (2000), personal well-being and social development are optimised



*Figure 1. Definition of the three needs in SDT.*

when these basic psychological needs are satisfied. A core practical implication of SDT is that individuals function better in social institutions that are responsive and sensitive to their needs (Assor, Kaplan, & Roth, 2002; Jang et al., 2009; Vansteenkiste et al., 2004).

Learners will be motivated when these three basic psychological needs are satisfied. SDT emphasises the importance of these three psychological nutrients and their dynamic interplay within social and learning environments. The SDT approach proactively focuses on systematically building competency, rather than repairing weakness (Deci & Vansteenkiste, 2004; Seligman & Csikszentmihalyi, 2000).

The three organic needs are interdependent. They reinforce, and complement each other, as well as operate to differing degrees, depending on surrounding conditions, and their collective orientation influences behaviour and experiences in the optimisation of human potential (Deci & Ryan, 2015). That is, the level and satisfaction of each need are continually subjected to alteration and modification as they interact with many individual adaptations such as positive feedback, choice or competition that could either enhance or undermine motivation (Deci & Ryan, 2012). Biological supports, as well as individual differences, motivational traits and activities of the mind that may exist independently of contexts or motivation, may also play crucial roles (Deci & Ryan, 2012).

From an SDT perspective, supporting students' need for relatedness starts with building positive teacher-student relationships where teachers take students' perspectives and internal frame of reference during interactions (Deci, Eghrari, Patrick, & Leone, 1994; Koestner et al., 1984). In relation to the need for autonomy, students are autonomous when they commit willingly to put in time and effort towards their studies. Providing autonomy support does not mean that teachers are "permissive" or that they indiscriminately accommodate their students' desired goals (Deci & Ryan, 2016). Optimally, teachers have to offer purposeful and explanatory rationales, including well-defined guidelines that set autonomy-supportive limits, without a controlling approach (Jang et al., 2010; Niemiec & Ryan, 2009; Soenens et al., 2007). Within these parameters, students experience a sense of competence when

they are able to complete school activities successfully (Niemic and Ryan, 2009). Hence, it becomes imperative for teachers to understand how their students perceive the world, regard them as narrators of their own experiences, and relate lessons to students' interests and values to support the successful completion of tasks (Deci & Ryan, 2016; Soenens et al., 2007).

Without a clear understanding of the unity and interdependence of these needs, we educators and researchers are unable to make critical judgments and choices, and may undermine the critical dimensions of these needs. Ryan (1982) finds that positive feedback provided within an autonomy-supportive environment tends to yield intrinsic motivation. However, when positive feedback is given within a controlling setting, it reduces intrinsic motivation. On the other hand, positive feedback within an autonomy-supportive condition improves intrinsic motivation.

SDT further suggests that, just like their students, teachers need structural and institutional support for autonomy in order to provide a facilitating learning environment (Deci & Ryan, 2016; Liu, Wang, & Ryan, 2016). Deci & Ryan (2016) highlight that when teachers feel that they have control over either the process or content of their teaching, will seek ways to encourage their students' interest and value in learning, thus promoting student autonomy and relatedness. However, teachers who face external pressures (such as having to comply with prescribed curricula and expected performance standards) are likely to use controlling rather than autonomy-supportive strategies with their students (Deci & Ryan, 2016; Pelletier et al., 2002; Ryan & Brown, 2005; Roth et al., 2007).

### **Section 3: Local NIE Research on Motivation and Low-Progress Learners**

This section summarises findings from studies carried out in NIE that explore the importance of the need for autonomy, relatedness and competence. In order to create supportive contexts to motivate students, we cite interventions that (1) stress the need to support teachers' autonomy-supportive behaviour (Wang et al.'s *Factors Influencing Teachers' Use of Motivational Strategies* and Wu et al.'s *Investigation of making-centred learning*); (2) create an environment that facilitates exploration, which caters to the three identified needs (Kapur, et al.'s *Designing for*

*Productive Failure and Tan et al.'s Insights into Cognitive and Motivational Processes in Project Work*). As there is currently limited local research that focuses purely on low-progress learners in Singapore, we have included in this section some local studies that investigated student motivation in general.

***Research Title: Factors Influencing Teachers' Use of Motivational Strategies in the Classroom***

A recent study led by John Wang (OER 2215 JW, 2017) who spearheads NIE's Motivation in Education Research Lab<sup>4\*\*\*\*</sup>, illustrates that although teachers need to take the first step to actively use motivational strategies that enhance the psychological needs of their students in the classroom, it is more important to understand the interdependent relationship between student and teacher motivation. The quantitative study, which involved 221 teachers and 1549 students from 10 schools, highlights that teachers are more likely to be driven to teach when the student is keen to learn and if the teachers themselves have more autonomy.

Wang and colleagues' (2017) findings demonstrate that entrusting teachers with more autonomy in their teaching and methods enables them to create a conducive learning environment for their students which leads to better understanding of their charges. This observation is consistent with the literature on SDT (Deci & Ryan, 2016). However, they reported that stress on the job can adversely affect the learning climate and level of student support provided by the teachers. Stress factors include students' performance, time constraints in covering the syllabus and pressure from school authorities. The conflict between the provision of autonomy support for students and the need for teachers to fulfil institutional goals is consistent with Wu and colleagues' investigation below.

***Research Title: Investigation of Making-Centred Learning Spaces in Singapore Schools to Promote Students' Interests in Science and Technology.***

This study has been chosen as it focuses on students' motivation to learn science and technology, and its finding on teachers' pedagogical

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<sup>4</sup>A centre that translates research findings on motivation into practical guides for teachers and practitioners in Singapore.

practice and beliefs are consistent with other Singapore studies (Dimmock & Goh, 2011). Wu and colleagues (DEV 04/14 WLK, 2016) observed three secondary schools to better understand and encourage the involvement of students in STEM<sup>5</sup>-related Applied Learning Programmes (ALP) by identifying and helping schools comprehend and leverage the strengths of interest-driven, multi-disciplinary STEM learning environments. They find that to cultivate making-centred learning, a shift away from dispensing ready-made knowledge to an environment that facilitates student exploration is crucial.

It appears that not all teachers are ready for this pedagogical shift, however. Teachers are concerned about the expectations they need to fulfil and the repercussions if they were to adopt a non-traditional pedagogical approach. Ultimately, it appears that the grades that students will graduate with are of paramount importance, even though the ministry has addressed these perceptions by making STEM ALP a non-examinable subject. Some teachers adopted a more task-oriented approach and were conservative in giving the students autonomy.

In their report, Wu et al. (2016) stated the challenges for ALP programmes, which included inadequate training and support, cost, and time constraints: (1) teachers felt that there was insufficient training and institutional support for conducting ALP lessons; and (2) there was not enough time to allow students the freedom to make mistakes, iterate and learn from the process, even though teachers expressed that they would like the students to experiment a lot more. Students also agreed that they did not have time to work on mistakes or to further improve on the artefacts that they had created.

Wang et al.'s (2017) and Wu et al.'s (2016) research highlight that when teachers' satisfaction of autonomy is undermined due to pressures to work towards specified outcomes, they tend to be less enthusiastic and creative, and instead rely on controlling strategies to produce "results" (Niemic & Ryan, 2009). Wang et al.'s research illustrates that there is no strategy more central to cultivating students' motivation than teacher autonomy support (Blumenfeld et al., 1991; Caleon et al. 2016a, 2016b; Deci & Ryan, 2016). Neglecting individuals' perspective and voice, needs and preferences is antithetical to the leading principles of

<sup>5</sup>Science, Technology, Engineering and Mathematics (STEM)

autonomy-supportive behavior (Reeve & Assor, 2011). The three research projects below aimed to address these concerns through focusing on how an environment that facilitates exploration is fundamental to building competence and autonomy.

***Research Title: Designing for Productive Failure***

Manu Kapur and his team worked with learners between grades 7 and 9, with PSLE (Primary School Leaving Examination) scores ranging from 200–260 (Kapur et al., 2012) to create an environment that facilitates exploration. A PSLE score ranging from 200–260 places the student in the Express stream, which consists of the ‘higher ability’ students compared to the Normal Academic stream. Conventional wisdom might conjecture that learners with higher PSLE scores would do better with novel mathematical problems, not formerly encountered in the curriculum. However, when Kapur administered new problems that could not be addressed by drawing on their previous academic knowledge, learners, despite their performance grouping, did not show significant differences in their abilities to solve these problems. It is arguable that when learners are afforded opportunities to represent knowledge in a variety of ways beyond what has been taught and when real-world problem situations are posed with little reference to the curricular and exam preparation, learners who are classified as lower ability in terms of their academic performance in a national examination seem to have an equal chance of suggesting useful or not useful solutions. An environment that facilitates exploration gives students a voice, respects students’ need for autonomy and competence (Assor et al., 2005), and challenges the ubiquity of deficit thinking (Valencia, 2010) that blames at-risk learners for school failure.

***Research Title: Enhancing Learning for Normal Stream Students: Insights into Cognitive and Motivational Processes in Project Work***

Tan et al. (2008) found that in terms of satisfaction of psychological needs, lower-ability stream (NA and NT) students had relatively high perceived relatedness (the feelings of closeness and belonging to a social group) and competence (the drive to attain outcomes and being effective in producing the desired actions), but relatively low autonomy (lack of self-initiation and self-regulation of their own learning) in Project Work (PW). The learners who were involved in the study recognised

the value of PW in developing metacognition, communication, collaboration, and problem-solving skills. While doing PW, the learners believed that they picked up valuable “life skills” such as work discipline, teamwork, tolerance and perseverance, and they enjoyed the process as well.

One of the enrichment opportunities afforded to the Gifted Education Programme (GEP) in Singapore is PW. According to the Ministry of Education<sup>6</sup> (2016), Project Work is an integral part of the GEP curriculum. Primary 4 GEP pupils are taught basic research skills and they apply these skills in a project of their choice. Although there are no grades awarded for these projects, the pupils’ projects are evaluated to reflect their attitude and the extent of their effort and involvement which promote both mastery orientation and the growth mind-set. Based on Tan et al.’s study, providing “lower ability” learners with the same PW opportunities afforded to GEP learners is important for the former’s development (2008).

***Research title: Helping Primary School Students Engage in Collaborative Problem Solving of Real World Issues: Focusing on Low Progress Learners***

Based on a quasi-experimental design with low-tracked primary students, Lam and colleagues (Lam, 2017; Lam & Low, 2016; Lam, Low, & Li, 2017) aimed to teach Primary 4 students about preserving the environment through an instructional method called “Preparation for Future Collaboration” (PFC), whereby students solved open-ended problems specific to the environmental challenges in Singapore. Based on their findings, they recommend that teachers use pedagogies that involve delaying direct instruction, even in primary school. Their work shows the benefits of engaging students in a problem-solving task before explicitly teaching the concepts. This runs counter to traditional methods, where teachers first provide step-by-step instructions and explicitly teach the concepts. They may afterward allow the students to engage in practice problems, if time allows. Such pedagogy could positively influence student learning and skill-building by de-emphasising the importance of “exam content” while creating classroom

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<sup>6</sup>Gifted Education Programme. Enrichment opportunities <https://www.moe.gov.sg/faq/education/gifted-education-programme/enrichment-opportunities>

time for students to explore the complexities of real world issues.

In summary, NIE's research findings suggest that although low-progress students have low perceived autonomy, this could be addressed by providing teachers with more autonomy. Autonomy-supportive teachers could provide students with an environment that facilitates exploration. NIE's research also demonstrates that challenging and more open-ended tasks, such as those found in project work, STEM-related ALP, and productive failure design can mitigate the adverse effects of focusing on performance goals by encouraging learners and teachers, to see mistakes and false steps as learning opportunities through the active process of knowledge construction, rather than as indicators of low ability (Blumenfeld et al., 1991).

## **Section 4: Literature on Strategies to Support Motivation**

This section illustrates how teachers can contribute to creating an environment that is necessary for autonomous motivation through drawing on the SDT framework. Targeting the underlying psychological mechanism of motivation through satisfying the three fundamental needs for competence, autonomy and relatedness is of primary interest. These core guiding principles to enhance the development of autonomous learners are not to be considered as independent approaches but as interacting and interdependent parts of a structural coherence that reinforce each other in activating and sustaining students' *desire* to learn. The path to sustainable motivation is not to view strategies to fulfil these needs as silo interventions, but rather to think of them as a catalyst to achieve a whole range of developmental goals. While the strategies discussed below can be applied to all students, this paper proposes that they are particularly important for low-progress learners to equip them with relevant skills in self-regulated learning.

### **Competence**

Niemiec and Ryan (2009) explain that allowing students to engage in optimally challenging tasks that would enable them to develop their capabilities can support students' competence. Within this process, it is significant that teachers provide appropriate tools and feedback to promote success and feelings of efficacy. The central assumption is that

students will only put in the time and effort and value activities that they can comprehend and master. Feedback should downplay evaluation and focus instead on students' individual processes in conceptualising knowledge, thus providing purposeful information on how to master the immediate task. The following sub-sections elucidate possible attempts to enhance learner motivation through fostering perceived competence. Strategies for enhancing competence include promoting mastery goal and growth mind-set and providing effective feedback.

### *Promoting Mastery Goal and Growth Mindset*

Educators play a key role in shaping learners' mindsets (Dweck, 2008). Ames and Archer (1988) describe a performance goal orientation as being judged by outperforming others, or by achieving success with little effort. This goal reflects a valuing of ability and high academic achievement. On the other hand, they define a mastery or learning goal as focusing on the development of or improving the acquisition of skills. High-individualised attention that puts emphasis on mastery goals can encourage a caring environment of openness and freedom to learn from mistakes that can foster motivation to learn (Williams & Williams, 2011).

Kaplan and Maehr (1999) find that ability-focused settings and the stressing of performance goals promote feelings of frustration and disaffection. Performance goal structures are also correlated with greater self-reported cheating and passivity towards class activities which manifest in disruptive behaviours in the classroom thus reducing learning opportunities (Meece, Anderman, & Anderman, 2006). Although school environments that are focused on demonstrating high ability and competition can increase the academic performance of some learners, research suggests that many young people experience diminished motivation under these conditions (Meece, Anderman, & Anderman, 2006). This diminished motivation may be even more acute for low-progress learners who do not feel a high sense of competence and relatedness.

Parallel to the dual conception of mastery-based academic goals and performance-based goals (Ames, 1992; Covington, 1992; Dweck, 1986) is the growth and fixed mind-sets. To encourage learner involvement,

it is essential to increase knowledge of the principles, practices, and assessments that are likely to affect mindsets, and subsequently levels of motivation in applied settings (Yeager et al., 2013). Learners who believe that intelligence and ability are permanent traits (fixed mind-set) are at a significant disadvantage compared to learners who believe their abilities can be developed (growth mind-set) (Dweck, 2008). While a 1994–1995 survey conducted in eight schools on NT students concluded that there was a tendency for their self-esteem and motivation to decrease as they move up in secondary schools (Chang, 1997; Chang, 1998), studies also reveal that classroom management and environments affect students' overall learning experience and motivation (Ismail & Tan, 2015; Goh, et al., 1996). Growth-mind-set interventions emphasise the possibility that intelligence can grow through working hard on appropriately challenging tasks. This is crucial for students placed in the “less academically streams” as it sends the message that a setback is an opportunity for growth, not a sign that a learner is academically incapable of learning (Paunesku et al., 2015).

### *Effective Feedback*

Autonomy-supportive teachers offer competence-relevant feedback that helps to develop and show confidence in students' abilities to complete tasks (Reeve et al., 2004). They can break complicated skills and strategies into specific, manageable and achievable components. Hattie and Timperly (2007, pp.86–90) argue that in order to provide effective feedback to help students make substantial progress toward achieving their goals, teachers need to help students address three major questions:

- a. *Where am I going?* (What are the goals?): This pertains to the learning goals and success criteria related to the task or performance;
- b. *How am I going?* (What progress is being made towards achieving the goal?): This information is provided by the teacher in relation to some expected standard, to prior performance, and/or to success or failure on a specific part of the task;
- c. *Where to next?* (What subsequent activities need to be undertaken to make better progress?): The teacher has to provide information that leads to greater possibilities

for learning through addressing what is and what is not understood.

This process allows students to assume control and autonomy over the learning process thus enhancing motivation (Craven et al., 1991; Martin et al., 2001; Mcinerney & Liem, 2008). When feedback is directed to improving strategy processing and developing self-regulation through making adjustments in effort, direction, and even strategies, it enhances both the mastery orientation and promotes the growth mind-set (Hattie & Timperly, 2007).

### ***Autonomy***

Deci and Ryan (2012), and Niemiec and Ryan (2009) conceptualise autonomy support as respecting and responding to the others' perspectives, minimising evaluative pressure and encouraging self-initiation and exploration in learning new tasks. Strategies for increasing students' urges to be causal agents and to experience volition (Deci & Vansteenkiste, 2004) include making use of learners' interests and background knowledge, and providing choice and control.

### ***Making Use of Learners' Interests and Background Knowledge***

According to James (1998), capitalising on what exists in our learners, taking the time to discover what learners are actually bringing to the lesson, or invoking that which they already know, is important. By asking students what they already know, teachers allow students to communicate their understanding of a particular topic and generate deep interest in their learners through building on or challenging existing knowledge.

### ***Choice and Control***

Martin (2002) defines academic resilience as students' ability to respond most adaptively to academic setbacks, stress and study pressure. He argues that the issue of control, which refers to the extent to which students feel they are able to overcome failure and succeed, is central to determining students' responses to setback, pressure or fear of failure. Students who feel they have low control over outcomes or are uncertain as to whether they can achieve the desired success may engage in counterproductive behaviour (e.g., being disruptive or

acting helpless) or may quit (e.g., experience learned helplessness) (Martin et al., 2001). On the other hand, high control is associated with students' persistence, attention, effort, participation, mastery motivation and achievement (Connell, 1985; Patrick, Skinner, & Belmont, 1993). Students develop a sense of control when they are able to see the relationship between their effort, strategy and educational success (Martin, 2002). It is important, however, to note that a strong desire to be in control of a situation for both teachers and students can emerge when the need for competence or autonomy are being thwarted (Deci & Ryan, 2000).

Methods of developing students' sense of control, encouraging learner involvement, and personal responsibility include giving students some level of choice (within workable parameters) over lesson objectives, criteria for assessment, and due dates for assignments (Fry & Coe 1980; McInerney, 2000; Ryan, 1982; Ryan & Grolnick, 1986; Trickett & Moos 1974). Linking back to project or problem-based learning, teachers can allow learners to decide what authentic problems to work on, how to approach the problem, choose the artefacts to construct and how to construct them (Blumenfeld et al., 1991). In project or problem-based learning, teachers may give autonomy to their learners to craft their research trajectory and to shape their project without constraining them within narrow disciplinary boundaries.

### ***Relatedness***

From the SDT perspective, students will tend to assume the values and practices of those whom they associate with closely and in environments in which they have a sense of belonging, even if the tasks seem less interesting (Niemiec & Ryan, 2009). Relatedness refers to the desire to pursue connectedness to others—that is, the need to be close to, trusting of, caring and loving for, and cared and loved for by others (Deci & Ryan, 2012). Within the classroom setting, relatedness refers to positive student-teacher and student-student relationships in which students perceive that the teacher respects and values them; that is, that the teacher sees them as all equal in worth and deserving the same opportunities. The strategy for enhancing relatedness discussed here is through building a positive teacher-student relationship. The strategies shared above to promote autonomy and to build students' competence also contribute to a positive teacher-student relationship

since the message students receive is that their teachers care enough to engage their interests and to provide them with choice and control. This reinforces the point that the three needs and strategies to achieve them are interdependent.

### ***Building Positive Teacher-Student Relationship***

The emphasis on positive relationship is pertinent given that teachers' high-level of trust in students is found to be a significant predictor of students' academic engagement (Brewster & Bowen, 2004) and achievement (Goddard, Tschannen-Moran & Hoy, 2001). Teachers' readiness to hear students' ideas and how they convey care, trust and confidence during open discussions contribute to an ethic of caring and play a crucial role in nurturing high-quality teacher-student relationships (Caleon et al., 2016a; Hamre, Pianta, & Allen, 2012; Murray & Zvoch, 2011), which is highly correlated with students' self-esteem, level of competency, and emotional connection (Furrer & Skinner, 2003; Osterman, 2000). For teachers to convey confidence and trust in their students' ability, they would need to overcome any form of deficit thinking about low-progress learners.

### ***Overarching Pedagogies***

While constructivist-oriented pedagogies are not always associated with SDT, we highlight three interrelated approaches in this section: project/problem-based learning, productive failure and cooperative learning. Each has been shown to work particularly well in motivating low-progress learners in the international literature, with indication they also work well among those in Singapore. In keeping with our SDT framework, these approaches work towards achieving the above elements of competence, autonomy, and relatedness, while being supported by the local studies highlighted. While this is true for all learners, the pedagogies are much less frequently used when instructing low-progress learners and thus are worth exploring here.

### ***Project/Problem-Based Learning***

In practice, the line between project- and problem-based learning is frequently blurred; the two are used in combination and play complementary roles (Hung, Jonassen, & Liu, 2008; Muir & Geiger, 2015). Fundamentally, problem- and project-based learning work within

the same orientation: both are authentic, constructivist approaches to learning (Blumenfeld et al., 1991; Hung, Jonassen, & Liu, 2008). The main difference between the two approaches lies in the extent to which the end product is the organising centre of the project (project-based) (Blumenfeld et al., 1991) or the problem is the organising centre of the project (problem-based) (Hung, Jonassen, & Liu, 2008). The central issue common to both is employing a pedagogical approach that allows the treatment of and response to uncertainty, which is a fundamental basis for MOE's TSLN initiative.

Project-based learning embeds students' learning processes in real-life problems to provide a clear purpose or intention for learning through creating a need to solve an authentic problem (Hung, Jonassen, & Liu, 2008). Although problem-based learning may be conceived as conditioning the child to view life as a series of problems, the advantage of this approach is that knowledge is not imposed mechanically but is instead "drawn out" to build on students' choice and inclinations (Hung, Jonassen, & Liu, 2008, pp. 486, 488). This can help meet students' need for relatedness and autonomy.

To remain relevant to the curriculum, integrating project-based learning with academic subject matter is imperative to yield solutions to complex problems (Muir & Geiger, 2015). This rich curricular practice, augmented by thoughtful framing by the teacher, affords both teachers and learners the opportunity to reveal their natural competence for teaching and learning (Muir & Geiger, 2015). In other words, it frees both teachers and students from routine work and liberate them for more innovative endeavours by going beyond the parameters of the syllabus. However, project-based learning may end up demotivating if the teacher adopts a performance orientation by emphasising grades and competitive performance, and using evaluation criteria that stress the need to produce the desired responses (Blumenfeld et al., 1991).

### *Productive Failure*

To overcome performance orientations, project-based learning can adopt the principles of productive failure (PF). PF provides opportunities for learners to explore, discuss, and solve problems related to new concepts first in class even though they may experience failure through the process, followed by consolidating the newly learned concepts and

associated procedures using video clips at home (Kapur, 2015; Muir & Geiger, 2015; Song & Kapur, 2017). Other instructional methods such as values-driven storytelling, and use of design and technology aim at cultivating creativity and criticality among low-progress learners are also effective, providing an open platform for students to demonstrate learning (Amir, 2013, 2014, 2018). By embracing uncertainty, and learning that they do not have to have the desired answer immediately, this pedagogical design offers learners opportunities to leverage on their prior knowledge and generate multiple methods for solving a problem thus promoting creativity, critical, and inventive problem-solving and-regulated learning skills (Kapur, 2011; Song & Kapur, 2017).

### *Cooperative Learning*

Cooperative learning is built on the principles of “positive interdependence” (Johnson & Johnson, 2009) and is crucial in promoting constructive social interactions (Williams & Williams, 2011). Positive interdependence exists when there is a positive correlation among individuals’ goal attainments; that is, individuals perceive that success can only be achieved when the other individuals with whom they are cooperatively linked also attain their goals (Johnson & Johnson, 2009). It results in *promotive* interaction wherein individuals support and facilitate each other’s efforts simultaneously to complete tasks which seem to generate individual responsibility and effort to achieve (Johnson & Johnson, 2009). The overarching principle of both relying on and providing instrumental peer support through shared inquiry facilitates the development of original insights and discoveries (Gabbert, Johnson & Johnson, 1986; Johnson & Johnson, 1981). Receiving and giving autonomy within the group increase a sense of relatedness (Deci et al., 2006)

## **Section 5: What Motivating Schools Could Look Like in Practice**

Although teachers need to create a conducive environment to engage students at the classroom level, this can only be achieved when the school’s organisational plan is able to support and sustain both teachers’ and students’ growth mind-sets and motivation at the meso level (Seligmann & Csikszentmihalyi, 2000). If the school’s organisation

and instructional programme convey that performing well on achievement tests and successful graduation can best be accomplished by generating and sustaining "an authoritarian, evaluative, and high-stakes social context", might be seen as a necessity (Reeve & Assor, 2011, p.121).

This paper highlights the importance of providing low-progress students with opportunities to take positions as designers and creators that could counter deficit views of their literacy practices and a schooling history of low expectations (Anderson et al., 2017). Given that these low-progress students could have been exposed to negative experiences with their teachers due to their placement, they are likely to feel that their teachers do not believe in their cognitive capabilities (Caleon et al., 2016a). It is hence critical to address teachers' deficit thinking to enhance student motivation (Blackwell, Trzesniewski, & Dweck, 2007; Hong, Chiu, Dweck, Lin, & Wan, 1999; Nussbaum & Dweck, 2008).

Providing appropriate autonomy-supportive environments that challenge teachers' perceptions on the fixed nature of low-progress students' ability can provide a rationale for the need to recognise a student's level of potential. Learners, particularly low-progress learners, must be systematically supported to take charge of their own learning trajectories and be motivated to constantly question, make connections, and find novel ways to address unique and complex problems (Liu, Wang, & Ryan, 2016). There is a need to strengthen and develop a more agile and responsive pedagogical instruction and innovative assessment that support learner autonomy and thus intrinsic motivation.

Schools which support autonomy provide frequent opportunities for students to experience autonomy by involving them in authentic experience and developing goals and values (Reeve & Assor, 2011). The following draws on Reeve and Assor's (2011, pp.122–125) attributes of an autonomy-promoting school, which is supported by other literature, to enable the development of an authentic inner compass in students. It is important not to view them simply as a list of separate components from which one can randomly pick, but rather as reinforcing the foundation and sustainability of the other. The approaches are not mutually exclusive.

### ***Positive Teacher-Student Relationships***

Within an autonomy-promoting school, teachers are growth-promoting allies who have open discussions with their students on a regular basis. Teachers are deeply respectful and understanding of students' perspectives and initiatives by inviting, welcoming, and incorporating students' input, which is crucial to develop and strengthen students' inner motivational resources (Reeve, 2016). Regular staff training and dialogue are necessary for teachers to develop their professional capacities in this domain (Sheldon & Ryan, 2011).

Liang and Dixon (2011) recommend that teachers can form communities where facilitators can engage teachers to articulate and discuss their beliefs about how to become more autonomy supportive, and guide teachers towards more student-initiated and student-centred classroom practices that could enhance student motivation for learners. In-service support through Networked Learning Communities and Professional Learning Communities within or across schools could provide platforms to help teachers decrease their own controlling behaviours (Feinberg et al., 2008) and to understand how to foster closer and trusting relationships with students to satisfy the need for relatedness (Assor, 2010; Feinberg et al., 2008). The assumption is that attending to this need will facilitate successful engagement efforts during teaching, coaching, and counselling (Sheldon & Ryan, 2011). While not a research study, interviews of NT students by Channel News Asia confirm that these students expect respect, recognition, and motivation from their teachers (Ser, 2004).

### ***Democratic Deliberation Procedures, Choice and Control***

Within such institutions, both teachers and students have considerable choice and control in relation to curriculum implementation. There exists an organisational structure in which teachers and students are authentic partners in determining rules pertaining to classroom management, and in the shaping of learning content, objectives and assessments (Rogers & Freiberg, 1994; Freiberg, 1996). This process assumes that the school's willingness to let teachers and students make highly consequential decisions together is instrumental in satisfying their need for autonomy competence and relatedness.

To allow the development of individual interests in the areas students find aligned with their principles and values, the autonomy-promoting

school would allocate substantial time and resources to activities where students can explore various domains of potential interest through avenues such as project-based learning. Suitable experts within and beyond the school can act as mentors and develop students' competence and skills. This can help students to form meaningful partnerships and develop an enduring intrinsic interest in their chosen domains. Teachers in an autonomy-promoting school can provide encouragement for initiative and effort for students to develop their own perspectives, and postpone advice, though they also provide expectations, and structure when needed (Reeve & Jang, 2006). This is in line with the principles of productive failure design and project-based education necessary to facilitate student exploration.

In addition, there is a need to encourage a thinking curriculum and the application of what is learnt in class to real-world issues. Educators have stressed that in an era of free-flow information, it is not practical to transmit to children great amounts of knowledge that can become redundant. Rather, it is more important to develop a thinking curriculum that focuses not on *what* to learn but *how* to learn. This process involves training children to enquire rather than conform to customary truth claims, to have a certain quality of skepticism, to approach authentic problems creatively (Reeve and Assor, 2011), and teaching them the tools of critical literacy in which to analyse and critically assess assumptions that are embedded within any text.

## **Section 6: Conclusion**

Motivation is a key mechanism for enhancing learning outcomes (Lazowski & Hulleman, 2016). Satisfying the need for autonomy and offering recurring classroom opportunities to experience autonomy can enable students to become more fully engaged in the learning process. While the literature here contributes to an understanding of learner motivation, no strategy is complete in and of itself. As Lazowski and Hulleman (2016) point out, effective strategies could be combined and their synergistic effects tested as supercharged interventions or as part of deeper curricular reforms. Such work, however, requires more than simply putting two strategies together. Instead, careful conceptual work is required to understand which strategies and constructs amplify each other, and how they connect developmentally or complementarily. However, it is important to note that even when students are taught

self-regulatory skills to enhance motivation and resilience, they may not employ them sufficiently unless they are confident that their academic and social problems have the potential to improve and change (Yeager & Dweck, 2012).

In summary, strategies for enhancing competence include promoting mastery goal and growth mind-set and providing effective feedback. Strategies for enhancing autonomy include making use of learners' interests and background knowledge, and providing choice and control. The strategy for enhancing relatedness discussed here is through building a positive teacher-student relationship.

At the institutional level, schools need to create environments that reinforce teachers' effort to support autonomy, competence and relatedness. At the policy level, effort has been underway to enable lower ability students to pursue more pathways. For example, NT students are now able to learn selected subjects at the higher NA level. It might be timely to evaluate if efforts to move towards a more flexible streaming system are meeting students' needs to feel competent, exercise choice in our education system, and thus feel a stronger sense of belonging. We need to continue our efforts to develop student-centric learning at classroom, school and policy levels to provide the optimal environment to meet students' needs for competence, autonomy and relatedness.

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