Levelling Up Academically Low Progress Students

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Levelling Up Academically Low Progress Students in Singapore

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Abstract
This paper draws from international literature and local studies in Singapore on low progress students to delineate the present state of local knowledge and practice, and suggest future directions for research and policy. The needs of low progress students vary and they may not perform as well as their peers due to a variety of reasons. According to local research, there is a range of learning orientations, motivations and talents, non-academic capabilities and psychological needs among these students, which should be considered in efforts to level them up. Besides individual factors, this paper also recognizes the importance of addressing both school- and education-system-related factors, as well as broader societal factors that could contribute to low progress. However, for the purpose of a more focused discussion, this paper looks more closely at the contributing school- and education-system-related factors to low progress. These factors can be categorized into areas of curriculum, instruction and pedagogy, assessment, teacher quality and attitudes, and school culture and structure. They are examined for constructive ideas, strategies and practices of which implications can inform and better the teaching and learning of local low progress students. We also seek to prepare students to face the new challenges in the 21st century as well as to fulfil the vision of achieving a student-centric education where each student matters and where education is positioned as a means by which meritocracy is implemented and social inequalities mediated. Therefore, this paper proposes that it is timely to revisit some long-held beliefs and practices, from pre-school education to teacher education, from education policy to micro-classroom pedagogies and management, from curriculum to assessment, and from the school level to engagement of community and family as stakeholders.
Introduction
At the Ministry of Education (MOE) Work Plan Seminar in 2011, the Minister of Education Heng Swee Kiat shared the vision of a student-centric education. This vision was reiterated at the same platform last year when Mr Heng emphasized the importance of taking a “broad and inclusive” approach and providing “multiple pathways” so that every student has the opportunity to succeed. While the pragmatic and economic orientation of the education system has remained relatively unchanged over the decades, an increasing concern for students-at-risk and disadvantaged students can be detected in educational policies in recent years.

Low progress (LP) students appeared in the Singapore education discourse in the late 1970s, as part of high attrition rates that was causing education “wastage” (MOE, 1979). The streaming system was introduced under the efficiency-driven paradigm to level up the system as a whole by having different groups of students study at varying pace. After the 1991 elections, a few more initiatives emerged to assist disadvantaged students. The Learning Support Programme (LSP), an English language support programme, was introduced in 1992 to help lower primary school students who are weak in the medium of instruction. A second programme, the Learning Support for Mathematics (LSM), emerged in 2006. Through these programmes, struggling learners received interventions to level up their reading and numeracy skills. In 1993, the Education Endowment Scheme, also known as the Edusave Scheme, was established to help students from low-income families. Further financial assistance plans such as the Opportunity Fund and Manpower grant was introduced in the 21st century to assist economically disadvantaged students. Apart from intervention programmes and financial aid, attempts were made to make education streams more porous. For instance, Normal Technical (NT) students are allowed to enrol in Normal Academic (NA) courses. In 2008, streaming in primary schools was replaced by Subject-Based Banding, which provides a differentiated curriculum for upper primary pupils who are weak in certain subjects.

In addition, technical education was also developed in an impressive manner with the expansion of the Institute of Technical Education
Specialized schools such as NorthLight Secondary School were introduced in 2007 to cater to students who have done poorly at the Primary School Leaving Examinations (PSLE) or are at risk of dropping out of school. Subsequently, another school of a similar nature, Assumption Pathway School, opened in 2009. Apart from offering Nitec and Higher Nitec courses, these two schools also provide students with ITE skills Certificate and education progression opportunities at ITE. Lastly, two specialized NT schools have been set up to teach only NT stream students. These students are offered a customized and practice-oriented curriculum and attachment opportunities developed in collaboration with ITE and industry partners.

As one can observe from the above measures, there have been changes on different fronts in the education system for LP students, ranging from specific programmes to specialized schools. Some of these initiatives have not been assessed in terms of their impact as they are still very new. However, as we grapple with the new changes, findings from the Programme for International Student Assessment (PISA) 2012 reveal that while Singapore has consistently been ranked as one of the world’s top education systems, there is also a long tail in achievement distributions (Organisation for Economic Co-operation and Development [OECD], December 2013). The percentages of Secondary 3 LP students (i.e., pupils who scored below level 2) were 10% for reading and science, and 8% for mathematics. This compels us to take stock of the research that has been conducted internationally and locally in relation to LP students to throw more light on what could be done to further help LP students.

Narrowing the achievement gap is a complex problem faced by many countries as it involves multiple factors, many of which lie beyond the school gates. This paper seeks to gain an understanding as to what contributes to low achievement and highlights the key lessons learned from successful experiences in levelling up of LP students gleaned from international literature. It also reviews local studies on LP students to identify effective practices that are relevant to the Singapore context and that create greater opportunities for these pupils. This paper will also discuss the implications for research and policy directions.
Explaining Low Achievement

*Working definitions of low achievement and LP students*

In different educational contexts, the term *low progress students* refers to different groups of learners. Historically, in the discourse on of low achievement, the Singapore education system focused on the 15–20% lowest academic scorers. Thus, our discussion of LP students includes those who performed least well at standardized examinations. This includes those who went to the NT stream after the PSLE, and Primary 1 and 2 students who attend the LSP. These students formed about 15%–20% of the lowest scorers nationwide. Many of these students live in 4-room or 3-room public housing flats and rarely use English as a medium of communication with family members (Chang, 1997; Foong, Ghani & Chang, 2012). In addition, their parents are usually not fluent in English (Ow, 1992). Also, compared to the demographic makeup of other streams such as NA and Express, the Malays and children from low-income family are disproportionately represented in NT classrooms (Albright, 2006; Albright, Heng & Harris, 2008; Ng, 1999).

When we talk about *levelling up*, the existence of achievement gaps is implied. The term *achievement gaps* is typically used to refer to differences in pupil attainment associated with social class, ethnicity and gender (Goodman & Burton, 2012) or differences in academic performance on tests among identified groups (Shannon & Bylsma, 2002). It is also sometimes used interchangeably with *educational inequality* in the discussion of variation in students’ learning outcomes in various educational contexts (e.g., Network of Experts in Social Sciences of Education and training, 2012; Timar, 2012; Wisconsin Center for Education Research, 2003). Thus, literature relating to achievement gaps is also consulted in this paper.

In education literature, the concept of *low achievement* (failure to meet average academic performance) is different from *underachievement* (a discrepancy between ability and expected performance). This paper focuses on the former because the major concerns of this paper are leveling up LP students and narrowing the achievement gap.
Factors contributing to low achievement
Effective strategies for levelling up LP students as quickly as possible are unlikely to be rightly identified without understanding their origins and why they persist (Miller, 1995). The Association for Supervision and Curriculum Development (ASCD) has classified factors contributing to low achievement, such as curriculum, teacher quality and learning environment as “inside the school”. Others include early development, home and community as “before and beyond the school” (ASCD, 2006). Although there may be different categorical approaches and theoretical frameworks in their discussions, the importance of addressing both types of causes is noted across various scholars on low achievement or achievement gaps (e.g., Dubois, 2001; Ford, Grantham & Whiting, 2008; Murphy, 2010; Stinson, 2006). Taking these established categorizations into consideration and to better frame the discussion in this paper, the contributing factors to low achievement are broadly classified into the following three levels: (1) Individual level (factors that may rest within individuals); (2) School and education system level (causes related to schools); and (3) Family and society level (causes beyond or external to schools). Factors that pertain to the individual level may include motivation and learning orientation of the individual student. The second category could include school factors like class size and teacher quality (Ream, Ryan & Espinoza, 2012) as well as those related to the education system. Factors such as the socio-economic status of the parents, collaborative efforts between community and school, and connection between education and the labour market can be perceived as family and society level. It is to be noted that although these three clusters are separated conceptually for the convenience of discussion, in reality, they co-exist and cannot be separated in overall efforts in levelling up LP students.

Levelling up LP students: Strategies in the Three Levels
In this section, we will refer to both international literature and studies in Singapore pertaining to LP students. Currently, there are few comprehensive studies on the causes of low achievement in Singapore. A perusal of local studies reveal that more research on LP students is conducted at the individual, school and education-system levels
rather than at the family and societal level. As we have seen from the above, many of the low progress students tend to have certain profiles (e.g., non-English speaking families, live in smaller public housing flats). So, in terms of the “family and society” level mentioned above, what these profiles mean to the possession of social, cultural as well as economic capital for these LP students should be considered in order to tailor effective assistance in levelling up efforts at the broader level. However, the local discussion on policy strategies in the area of narrowing achievement gaps in most countries (including Singapore) have focused more on individual or school-based causes rather than environmental or social causes. Hence, we will pay more attention to efforts/ strategies at the individual, school and education system levels than at the family and society levels. It is worth noting that most of the local findings pertaining to the studies funded by the Office of Education Research, National Institute of Education (OER, NIE) discussed below appear in internal reports rather than public publications.

**Individual level (Profiles of LP students)**

In the United States, research on schools that successfully narrow the achievement gap suggests that schools must take a long-term, comprehensive approach that aims to provide students with capable teachers to meet the learning needs of their students (Boykin & Noguera, 2011). International literature also often raised the fact that there is a range of diverse talents among LP students (e.g., ASCD, 2006; Boykin & Noguera, 2011). LP students may not perform as well due to a variety of reasons and there is also a range of learning orientations, motivations and talents among them to consider when planning the strategies to assist them. Thus, learning about LP students’ profiles helps us to get closer to the right solutions in levelling them up.

*Learning difficulties, learning styles, and classroom behaviours*

Mathematics factors such as logical-thinking ability, computational skills, mathematical language, and mathematical concept contributed more to primary school low progress students’ Math achievement than psychological factors like pupils’ attitude towards Math, interest, and memory do (Loo & Fong, 1996). In high-school setting, the most outstanding problem faced by the NT students is the inability to
understand lessons that are taught by teachers (Chang, 1997; Ismail & Tan, 2005). The lack of personal teacher-student relationships, as reflected in teacher apathy and lack of caring, has been identified by some LP students as one major factor contributing to their failure and inability to take responsibility for their own learning (P. Lee, 1999).

Studies also reveal that LP students prefer to learn by “watching” and “doing”, and are less successful at handling learning that involves abstraction and memory (C.F. Ng, 1999). They also prefer formally designed learning environments, but usually have poor study habits (Chang, 1997; Lim, 1999). During Math lessons, many LP students have relatively short attention span and are inattentive and easily distracted (Foong, 1999; M. Ng, 1993). They rely on teachers most of the time but rarely seek help from their teachers when in doubt. Quite often, they are not on-track, unable to complete class work on time, and do not hand in their homework (Foong, 1999; Foong et al., 2012).

**Non-academic capabilities of LP students**

Based on students’ self-assessment, Hogan and Kang (2009) reported that non-academic capacities, skills and competencies do not vary significantly across ethnic groups, gender, residence type or stream. Particularly, NT students had similar scores with those in other streams in their problem-solving skills, and score even higher than their Express and NA peers in generic agentic skills, goal-planning competence, and time management. It seems that LP students have the potential to develop non-academic dimensions of the 21st century skills. This finding concurs with Manu Kapur’s project on productive failure, which indicates that students who are strikingly dissimilar on the PSLE appear to be strikingly similar in their ability to design solutions to novel problems (Kapur & Bielaczyc, 2011). When real-world problem situations are posed with little reference to the curricular and exam preparation, LP students seem to have an equal chance of suggesting useful or non-useful solutions as their peers.

**Psychological needs of LP students**

LP students are diverse in their psychological needs and heterogeneous in their abilities (Foong, 1999). Among low progress students in Math in primary schools, for example, learning arouses a range of emotions, from feelings of happiness, dislike, anger,
confusion, stress and anxiety to boredom (Kaur & Ghani, 2012). LP students usually have low self-esteem, low self-concept and low self-efficacy (Foong et al., 2012; L. Lee, 1999). In addition, as compared to Express students, NA and NT students show a stronger tendency for social power (working hard to be put in charge of a group), affiliation (preferring to work with others rather than alone) and token goals (learning for rewards) as well as surface learning (learning by memorizing) (Mcinerney, Liem, Ortiga & Qi, 2008). They also have 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 (self-initiation and self-regulation of their own learning) in doing classroom tasks (Tan, Wang, Ee, Koh & Liu, 2009). There is also evidence showing that low progress students who perceive teachers as communicating care and personal support also express more quality teacher–student relationships and reported better adaptation in school (Chong, Huan, Quek, Yeo & Ang, 2010). LP students benefit from the valuing of their personal, experiential and intellectual assets that they bring with them and also from the cultivation of emotional competence (Boykin & Noguera, 2011, pp.191–198).

The above findings offer insights into LP students’ non-academic capabilities and psychological states of mind in learning, which have implications for teachers and policymakers not only in their approach to teaching them, but also in planning curriculum and instruction.

**School and education-system level**

Murphy (2010, pp. 237–269) suggested the following factors that need to be addressed to narrow achievement gaps within the school and education-system domain:

- Instructional programmes, which includes variables such as effective instructional practices, challenging curriculum and additional instructional support to those in need.
- School culture, which refers to the impact of the absence of culturally adaptive schools and culturally responsive classrooms on achievement gaps. It also covers aspects of sense of safety, disciplinary climate and caring environment in a school.
• School structure and support, which refers to financial resources, sizes of district, school and class, district, family and community involvement, and student composition.

To better suit the discussion of local context, we break down “instructional programmes” described above into instruction, pedagogy and curriculum and assessment. Along with teacher quality and attitude and school culture and structure, they form the areas which we focus on at the school level. Assessment is separated from instruction, pedagogy and curriculum here solely for the intention of according more attention to this deserving topic. For the education system level, we focus on system-wide issues including early childhood education, school autonomy, and effect of tracking (or streaming).

**Instruction, pedagogy and curriculum**

*Quality and engagement of instruction and pedagogy*

Improving the overall quality of instruction is one of the most effective ways to boost student achievement in schools. Like their gifted peers, LP students need to have access to high-quality instruction and resources (Boykin & Noguera, 2011). High-quality instruction that supports interest, autonomy and engagement in learning facilitates the development of effective cognitive strategies of at-risk and LP students (Guthrie & Davis, 2003; Guthrie & Wigfield, 2000; Guthrie et al., 2006). International literature has also shown that students succeed when the pedagogy is engaging. In Finland, it is customary for teachers to combine various pedagogical methods to adjust to the needs of individual students. Students who are academically at risk need a greater amount of cognitive, affective and social support. Such support can be enhanced by fostering students’ curiosity, interest and desire to learn through providing opportunities for enjoyable real-world interaction, authentic and exciting tasks at school, personal choice of materials and methods to learn, and collaborative interaction with peers (Linnakylä, Väliärvi & Arffman, 2011).

Pedagogical intervention programmes to improve LP students’ performance can also be found in Singapore schools. Local researchers have studied the effect of a number of innovative intervention programmes on LP students’ development of cognitive and affective competencies. Chong (2005) argued that for LP students, a
balanced focus on developing self-regulatory skills (e.g., setting goals by pupils, monitoring self-behaviours, evaluating consequences) is particularly valuable because of its close link to academic achievement. Also, executive-function training on working memory is reported to have a modest effect on increasing at-risk pupils’ capacity in primary Math (K. Lee, 2011). Furthermore, the Big Math for Little Kids (BMLK) programme, which helps teachers challenge their pedagogical assumptions (e.g., the use of key word such as “altogether” could help children solve simple addition and subtraction questions), has been proven to be beneficial to LP students in primary Math (Heng, Har & Ginsburg, 2011). Setting NT students the task of creating Physics-based toys not only raised the challenge of academic activity but also incorporated creative elements in teaching Science (Nazir & Subramaniam, 2007). The task engaged the hands and minds in a way that suits the students’ learning styles and students were observed to be very engaged. The students even stayed back after school hours to complete the project. Another example is the Literature-Driven English Curriculum (LDEC) programme, which incorporated different forms of non-print texts such as movies, songs, video clips and comics into the concept of “Literature” (Pereira, Netto-Shek & Ayaduray, 2009). It has been reported to be effective in helping secondary LP students in their writing and reading comprehension skills.

Providing challenging curriculum
It is commonly reported in international literature that the subject matter covered in the lower education tracks is often presented in a less challenging way, with an emphasis on memorization. It is quite different from that in higher tracks where attention is devoted to problem solving and critical thinking (Evertson, 1982; Murphy & Hallinger, 1989; Oakes, 1985; Page, 1991). In the local context, students are provided with more experience-driven pedagogy as they are thought to learn better with hands-on activities. Worksheets, behaviour and time-on-task management, and drill and review are common in NT classrooms with less focus on integration of subject matter, the acquisition of meta-languages, and analysis (Albright & Ismail, 2006). In programmes for pupils who are low attainers in primary Math, teachers usually make few attempts to engage pupils in higher order thinking or stimulate the development of pupils’ metacognition. Pupils also lack opportunities to
clarify their thoughts and ideas with their peers (Kaur & Ghani, 2012). However, students succeed when the curriculum is challenging (ASCD, 2006). LP students gain significantly from tasks that require thinking, reasoning, and questioning skills. They also benefit from instruction of higher order thinking skills (Zohar & Dori, 2003; Zohar & Peled, 2008). Hence, a more rigorous and challenging curriculum containing these features should be provided to LP students.

**Assessment: Encouraging “soft” assessment**

One of the effects of national, high-stakes tests on schools and learners is that it narrows the focus of learning on test scores. Numerous critics have objected to overreliance on test scores as a means to gauge student performance because these scores do not reveal other dimensions of learning performance, such as discursive writing and problem-solving skills that are important to promoting high levels of achievement (Meier, 2001; Ravitch, 2010). Educational output is not a fixed variable, but rather, a variable that is sensitive to the fact that different students have different talents, motivations and ambitions. Equality of output should be replaced with “differential excellence” (Van Avermaet, Van Houtte & Van den Branden, 2011, p. 8). To achieve that goal, different yardsticks in assessment practice should be explored and applied. In Finland, for example, the assessment culture is characterized as “soft” or formative. Assessment is interpreted as an ongoing part of daily school work and aims to support learners rather than control students’ learning. Students’ efforts, interests and enjoyment are taken into account (Linnakylä et al., 2011, p. 207). Students are the ones who are driving the learning and development, not the teachers or test scores. Responsibility of learning lies primarily with the learners themselves (Hattie, 2012).

**Teacher quality and attitude**

*High expectations and high level of support*

Teachers tend to communicate more positively with, give more support to, and spend more time on students whose academic performance they have higher expectations of (Page & Rosenthal, 1990; Richardson, 2002). In a comparative study of the Nordic countries, Finnish teachers tend to foster high expectations for their students’ learning. Students in the countries with the highest expectations also performed highest
in the international assessment (Linnakylä et al., 2011). Teacher expectations tend to be relatively low for LP students with regard to student development (Van Houtte, 2011). Consequently, teachers of LP students often make less effort to promote LP students’ skills and provide the students with only minimal stimuli and support (Jaspaert & Van den Branden, 2011). In Singapore, some teachers of LP students were found to expect less from their students due to the perception that they are only capable of handling basic content and skills (Kang, 2005; Kramer-Dahl & Kwek, 2011). This finding is supported by a study that reported that Normal streams (NA and NT) students noted that they were generally not expected to master the same depth of materials as their Express-stream peers (Kang, 2005). They perceived that their teachers selectively choose to teach them less challenging materials and are inclined to encourage them to consider Institute of Technical Education (ITE) rather than junior colleges (which open doors to a university education) after secondary education (Kang, 2005). Research suggests that LP students need to be offered tasks that are above their current level of development and be invited to “stretch their muscles” (Van Avermaet et al., 2011). LP students learn from those teachers who demand a great deal of assignments, projects and classwork and yet maintain their demands in a flexible and creative manner (P. Lee, 1999). More importantly, while providing LP students with challenging and meaningful tasks, teachers should actively guide LP students through the performance of the tasks (Linnakylä et al., 2011).

Positive teacher beliefs and attitude
Encouragement, evaluation, attentiveness from teachers and their attitudes greatly influence at-risk and LP students’ perceptions of themselves as learners (Mercer & Mercer, 2005). Teachers teaching students in higher tracks are more likely to promote learning than those teaching students in lower tracks (Oakes, 1985). Teachers in higher tracks are also found to be more enthusiastic and better prepared in their lessons (Goodlad, 1984; Oakes, 1985). In contrast, students in the lower tracks often receive fewer explanations and directions with regard to instructions and goals (Evertson, 1982; Goodlad, 1984). Compared to teaching gifted and high-ability learners, teachers working with low progress students need to
understand the needs of these students in order to remediate their difficulties so that they are able to meet academic standards (Saft & Pianta, 2001; Van Houtte, 2011).

**School culture and structure**

*Bridging the language gap for linguistically diverse students*

Students who have little exposure to the language of instruction at home need to be given sufficient support at schools to acquire the academic, standard variety of the instructional language. A strategy that is commonly preferred by schools is to organize pull-out classes for minority or immigrant students and offer them intensive language lessons. However, the impact of these lessons on the students’ academic achievement has been shown to be relatively limited considering the high investment of time, energy, and resources (Baker, 2004; Hattie, 2008). Schools need to deal with these challenges that minority or immigrant students face. One useful strategy is to make the students’ home language a facilitated tool. Schools should see minority-language speakers as individuals who have a wide resource of language-related skills and practices, all of which they can exploit to create valuable and rich learning experiences in a school context (Garcia & Kleifgen, 2011). Other suggested strategies include fostering connections between home and school experience, utilizing learners’ background knowledge, and encouraging culturally relevant teaching practices (Hamann & Reeves, 2012).

**Fostering whole-school caring and sharing**

The personal, affective dimensions of education are crucial to LP students’ positive schooling experiences. All school personnel, including teachers, student counsellors and school leaders, should play a role in their students’ lives by displaying concern about their progress and spending extra time with them to motivate these learners to see the importance of schooling in their lives (P. Lee, 1999). The whole-school concept should also be applied to LP students’ learning. In literacy education for LP students, for example, the issue of increasing literacy proficiency can be taken up by the whole school. Teachers, coordinating staff and school leaders can deliberate together and implement appropriate strategies in the classrooms. Teachers should inform one another of strategies they
have tried to raise student achievement and motivation (Jaspaert & Van den Branden, 2011).

**Education-system level**

The OECD report on supporting disadvantaged students and schools argues that education authorities should avoid system-level policies conducive to school and student failure (OECD, 2012). Five practices were suggested to prevent student failure: (1) eliminate grade repetition; (2) avoid early tracking and defer student selection to upper secondary; (3) manage school choice to avoid segregation and increased inequalities; (4) make funding strategies responsive to students’ and schools’ needs; and (5) design equivalent secondary education pathways to ensure completion of compulsory education. The report claims that these recommendations are effective in bringing about improvements in schools with higher proportions of disadvantaged students who are at a greater risk of low performance. Other measures include strengthening school leadership, stimulating a supportive school climate and environment for learning, attracting and retaining high-quality teachers, ensuring effective classroom-learning strategies, and prioritizing links between schools, parents and communities. Following this line, the following discussion focuses on the relevant system-level policies focused on supporting LP students and closing the achievement gaps.

**Identifying and supporting LP students from an early age**

Identifying students who are academically at risk at an early stage by considering various factors, such as their mother tongue, home language and socioeconomic background, is a useful strategy in narrowing the achievement gap. The PISA studies are particularly revealing in this respect (Jaspaert & Van den Branden, 2011). More importantly, the early identification should be followed by early support. With the support of high-quality early childhood learning opportunities, it is possible to make significant progress in reducing the gap, given that high-quality preschool and early childhood education might be more effective than the ones in kindergarten in terms of closing the achievement gap (Azzi-Lessing, 2009; Crane & Barg, 2003). Since we have stated some commonalities (e.g., non-English-speaking homes, lower SES) across the LP groups in primary and secondary schools in
Singapore, these features would help the identification of those in need of further support at an early stage.

**Enhancing school and teacher autonomy**

In international comparative studies, countries with greater degrees of school and teacher autonomy attain higher student performance than countries with a lower level of autonomy (Linnakylä et al., 2011). The Finnish educational system, for example, does not follow the international accountability trend (involving high-stakes, centralized testing), but prefers to give a large degree of autonomy to the schools and teachers (Van Avermaet, Van Houtte & Van den Branden, 2011; Linnakylä et al., 2011). Specific pedagogical objectives, subject-matter content and classroom practices are determined by the teacher, who enjoys a substantial degree of pedagogical autonomy (Jakku-Sihvonen & Niemi, 2006; Linnakylä et al., 2011). Likewise, schools also receive full autonomy to develop curricula, decide on pedagogical values and construct learning environments (Laukkanen, 1995; Schleicher, 2006). The autonomy given to teachers and schools to adopt practices that reflect student characteristics and school culture is particularly significant in the aspect of assessment in educational contexts involving bilingual or multilingual students. In such contexts, alternative forms of assessment are required in order to take into account the diverse cultural norms of the students being assessed (Cummins, 2000; Garcia & Pearson, 1994; Mercer, 1989).

**Reducing negative effects of tracking or streaming**

Using data from international educational surveys of 4th graders and 15-year olds, Hanushek and Woessmann (2006) contended that tracking has a negative impact on educational equality. Under tracking systems, students experience significant differences in academic orientation, curriculum, instructional quality and school climate, which result in a growing academic gap (Gamoran, 2004; Montt, 2011; Oakes et al., 1992; Park & Sandefur, 2010). Student selection under the tracking system exacerbates education inequity and inequality since students from disadvantaged backgrounds are more likely to be placed in the least academically oriented tracks (Spinath & Spinath, 2005). In many countries with early-tracking systems, low-SES students and ethnic minority students
are overrepresented in the technical and vocational strands of secondary education (Au, 2008; Figlio & Page, 2002; Hilliard, 2000). In contrast, later tracking was found to reduce the impact of the family socioeconomic background on student performance (Schütz, Ursprung & Wößmann, 2008).

To reduce the impact of tracking system on education inequality, the OECD report suggests three policy options to defer student selection: (1) delay selection and adopt comprehensive schooling until upper secondary school; (2) eliminate lower level tracks; and (3) limit the negative effects of early selection (OECD, 2012). One way to limit the negative effects of early selection is to allow for more internal transfer upwards to a higher track or stream by encouraging a system where students can transfer across tracks or streams. Some methods to increase opportunities for upward transfer include eliminating the necessity of repeating materials on lower stream classrooms and decreasing the differentiation between the higher stream and lower stream curricula (Dronkers, 2010). In addition, in Sweden, Meghir and Palme (2005) found that students who showed high ability and came from a disadvantaged socioeconomic background particularly benefit from the change from tracking to a comprehensive school system. Results of this kind have convinced a great number of educators that a more comprehensive school system tends to lower the weight of the social background as an explanatory factor of the variance in results obtained by students (e.g., Alegre & Arnett, 2007; OECD, 2007). In contrast to a tracking system, a comprehensive school system features students in heterogeneous groups, in which low-performing students have the opportunity to see how other students approach, explore, question and interpret information and why the perspectives and understanding of these students may differ from those of their own (OECD, 2007).

**Family and society level**

School-based efforts alone are not sufficient to close achievement gaps, although they are certainly needed. Policies on closing achievement gap must also address issues in the social and economic institutions that prepare children to learn in radically different ways (Rothstein, 2004; Williams, 2003), given that these issues have a
somehow larger impact than school-based characteristics on student performance (Anderson, 2010). However, many policy strategies in closing achievement gaps have been directed almost exclusively at schools to address school-based causes of the gaps. On the other hand, inadequate effort and insufficient resources have been directed to socioeconomic and family domains to address out-of-school factors (Hertert & Teague, 2003; Rothstein, 2004; Timar, 2012). Causes in these domains are more connected to larger social and economic conditions in society and also to the family environment in which children are raised, such as socioeconomic status, family conditions, and community dynamics. For systematic reforms to address these causes, Rothstein (2004) suggests that the focus should be on closing the wide income gap between lower- and middle-class parents; providing affordable, stable and adequate housing; establishing health clinics associated with communities and schools, and providing adequate early childhood education. Similar efforts were also proposed by Murphy (2010), who indicates two significant policy directions to address the causes in the environmental domain:

1. Improving the economic and social conditions of low-income families. Priority should be given to policies that expand the family resources available to less well-to-do youngsters (Miller, 1995) and that aim at avoiding the harmful consequences of poverty in early childhood (Maguson & Duncan, 2006). Policy strategies can be clustered into four categories: welfare, job training, taxes and employment.

2. Compensating for the conditions of poverty and discrimination. Essential policies include programmes to assist parents with young children, preschool services, extended schooling opportunities (e.g., summer school programmes), and health/welfare services (e.g., housing, transportation).

During the past 2 decades, as part of its efforts to address the causes of achievement gaps in the environment domain, MOE Singapore has refined various financial aid and compensatory programmes for students from low-SES families by adding additional funds to the Financial Assistance Scheme (FAS), extending the FAS to pre-school education and special education, and lowering the eligibility for the FAS
(Heng, 2011; Kang, 2011; Zulkifli, 2010). However, the effect of these initiatives on levelling up LP students is still not clear due to the lack of relevant studies in this area.

**Implications**
Over the years, MOE’s efforts to level up LP students included initiatives such as providing more financial assistance, introducing schemes of academic support, setting up specialized schools to accommodate students who are at risk of dropping out from mainstream schools, and creating greater flexibility for the students (OECD, 2012). The findings from international literature and local studies in Singapore highlight the gap between current development and the desired outcomes in the Ministry’s efforts to help LP students learn better. These informative findings also yield significant implications to educational policy on levelling up LP students and narrowing the achievement gap in Singapore at different levels in both school and social domains.

**School domain (classroom, school, community and system levels)**
*Making creative modifications to pedagogy and instruction*
Among the many variables influencing student achievement, the quality of pedagogy and instruction that students receive may be the most important factor. Effective teaching of LP students should feature the recognition of the students’ psychological needs for autonomy, competence and relatedness, the creation of a learning environment that encourages the students’ active participation in innovative activities, and the usage of metacognition and collaborative skills. The Ministry could encourage teaching that creates stimulating and inspiring classrooms where LP students engage in problem-solving and use their creativity and imagination to address interesting and important subjects. Modifications to classroom pedagogy and instruction could focus on increasing the intensity and quality of group work; using culturally relevant teaching materials, interesting topics, problem-solving tasks in a competitive manner; and planning and conducting interactive and collective activities. In particular, despite their academic difficulties, LP students are on equal footing with their high-ability peers in terms of development in the non-academic aspects of the 21st century skills.
These skills may not only provide an opportunity for LP students to prove themselves and enhance their self-concept, but can also be used as an impetus to bring about higher academic achievements for LP students.

*Raising teacher expectations and developing teacher capacities*
How teachers work with LP students is shaped primarily by what they believe about the students and what they can do with the students. Low teacher expectations restrict the learning opportunities of LP students, deprive the students of high-quality teaching, and reduce the motivation level of these students to a great extent. Since it appears from studies stated in the previous section that teachers usually have low expectations on NT students, the expectations of teachers towards NT students and LP students in general should be raised. Instead of teaching less, simplifying materials, and encouraging limited post-secondary choices, teachers need to maintain their demands of these students and engage them with various types of assignments and projects to fully explore the students' potential. Additionally, in order to support LP students, teachers could play multiple roles such as guidelines and feedback provider, pedagogy expert and affection counsellor. To achieve this, in-service and sustained teacher training with the focus on significant issues such as differentiated pedagogy, alternative assessment methods, textbook evaluation and materials adaptation, need to be in place. Coaching and mentoring are important ways to change teachers’ beliefs and build their capacity to work with LP students.

*Bridging the language gap*
Many LP students in Singapore tend to have a non-English speaking home background. Moreover, there is now a greater presence of foreign students, immigrant children, as well as local-born children of migrant mothers from lower socioeconomic background. Many of these students are learning English as a foreign or a second language. Bridging the language gap for these immigrant and disadvantaged children is crucial for helping these students adapt schooling better. To do this, students’ mother tongues should be seen as a useful tool in helping the students’ English-language acquisition. One useful strategy may be to invite support from the parents and community members.
Also, in schools, we need to have bilingual counsellors and teachers who are able to work with LP students and their families more closely.

**Building up family-school-community connections**

In supporting LP students, one will need to take into account the kind of family involvement in the students’ learning, the languages they are more proficient in, and their “funds of knowledge”, – hidden home and community resources of the students (Moll, Neff & Gonzalez, 1992) – or, “virtual schoolbags”. These are the kinds of informal, but nevertheless, valuable knowledge that they acquire outside of school (Thomson, 2002). As family, school and community act as overlapping spheres of influence on students, efforts should be made to enhance the family–school–community connections to raise LP students’ chances of performing well at schools. Schools should try to build on the resources that parents and children bring to the school, look for levels of change in community life, and intensify cooperation and communication with parents and the rest of the neighbourhood. Communities and well-educated families can facilitate their involvement through increased funding and educational resources such as school-linked services and referral programmes for free or subsidized community classes.

**Adopting challenging curriculum and multiple yardsticks in assessment**

It is crucial to provide LP students with challenging curriculum that focus not only on explicit teaching of sub-skills but on higher-level, complex problem solving and also meaningful content in order to stimulate the occurrence of learning. Less rigorous curriculum often contribute to LP students’ low expectations of themselves and limit their educational opportunities. The right for LP students to access high-quality teaching and education resources should not be deprived simply because of their current performance. To offer LP students an equal education opportunity, these students need to be encouraged and supported to engage with content knowledge and tasks that are above their current level of competencies or abilities.

Also, for LP students, alternative modes of assessment need to be applied to practices not only to help them improve academic
achievement, but also explore to LP students’ potential and capabilities in non-academic areas. Different types of assessment should also ensure that LP students are assessed on tasks related to their real-life needs to increase the relevance of the assessments (Lee & Bathmaker, 2007). LP students’ interest, engagement, enjoyment and self-concept could be considered as part of the learning outcomes and be taken into account in formative assessment practices.

**Reconsidering the timing and implementation of streaming**

Although there is no clear-cut evidence that placing students in different tracks at an early stage of their educational career is related to low achievement, the way curriculum is designed, instruction is organized, and type of tasks and texts are given to LP students, may, to a great extent, perpetuate their continued low achievement. Whether streaming students at an early age can help close the achievement gap is still under debate. Some have argued that while a single high-stake exam like the PSLE is a useful tool for gauging academic progress, it has also led to an excessive focus on testing, resulting in the narrowing of the curriculum and a heavy emphasis on test preparation.

It may be worthwhile to reconsider the timing and implementation of streaming as a means to narrow the achievement gap. This is especially crucial in view of the current diversification of secondary school education, with the introduction of specialized schools and schools with Integrated programmes (IP). In Singapore, streaming as introduced in 1978 has played a significant role in students’ learning outcomes and educational choices. Under the streaming system, the textbooks and the syllabus are less dense and rigorous for students in NA stream (Kang, 2005). The curriculum for NT-stream students is also geared towards a more practice-oriented learning, moving away from a differentiated academic context (Kramer-Dahl & Kwek, 2011). Consequently, the academic streaming system in Singapore seems to play a larger role in shaping students’ post-secondary aspirations than family context due to systematic factors and resources (Kang, 2005). It is debatable whether streaming students at an early age can help close the achievement gap. However, the timing and implementation of streaming is still worth reconsidering, so as to close the achievement gap caused by complex structural issues. More research is required
to identify and reduce any negative effects in order to make streaming a constructive diversification channel as it was intended, rather than a negative stratifying one. Research is also needed to gain an understanding of the perspectives of stakeholders (such as schools, parents and employers) on how “success” is to be defined and the goals of education to be shaped.

**Social domain (family and society levels)**

Educators and education reformers who focus on systematic reform or teacher quality without giving attention to social environmental factors will continue to be frustrated by more failure than success (Bainbridge & Lasley, 2002). Policies on closing achievement gap must address home factors and wider societal issues (Williams, 2003). However, like many other countries striving for educational quality, the discussion on policy strategies in the area of closing achievement gaps in Singapore have focused more on school-based causes rather than environment-based or social causes. For reforms to have sustained effects, we need to consider ways to improve or compensate for the socioeconomic conditions of disadvantaged families, considering that the majority of LP students are from families with lower socioeconomic status.

To summarize, all underserved populations, including high-poverty students, students with special learning needs students of different cultural backgrounds, non-native English speakers, and urban and rural students, must have access to innovative, engaging, and challenging coursework and curriculum, high-quality teachers, positive and healthy learning environment, and supportive school culture and structure, to help them address the *schooling causes*. Meanwhile, efforts on improving the socio-economic status of difficult families, expanding their resources, and compensating measures for their disadvantaged socioeconomic positions are equally significant to support the students deal with the environmental causes (ASCD, 2006).

**Conclusion**

A systemic approach to educating LP students as a whole may have been effective to a great extent for the past decades in producing an educated population and workforce. But with new challenges in the 21st century and with a vision of achieving a student-centric education
where each student matters and where education is positioned as means by which meritocracy is implemented and social inequalities mediated, we should consider a paradigm shift in the way LP students are levelled up. It is timely to revisit some long-held beliefs and practices, from pre-school education to teacher education, from education policy to micro-classroom pedagogies and management, from curriculum to assessment, from the school level to engagement of community and family as stakeholders. In Singapore, for example, a single test like the PSLE is a useful tool for gauging academic progress, but an exclusive focus on testing leads to narrowing of the curriculum and heavy emphasis on test preparation. Instead, the authorities, schools and parents should adjust their mind-sets and value different intelligences and redefine success. Through paradigm change of this kind, the education system and society would be able to provide a better environment that supports students with different talents and needs. More research could be conducted on LP students in order to gain further insight in their educational experiences and longitudinal studies could be carried out on interventions to ascertain what strategies best serve the Singapore context. It is hoped that with the appropriate educational reforms, the effects of social inequalities on low achievement are minimized, making learning a better and dignified experience for every student.

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