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| Author(s) | Liang See Tan, Letchmi Devi Ponnusamy, Shu Shing Lee, Elizabeth Koh, Lauren Koh, Jing Yi Tan, Keith Chiu Kian Tan, Terence Titus Song An Chia |
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# Intricacies of designing and implementing enrichment programs for high-ability students

Liang See Tan[1], Letchmi Devi Ponnusamy, Shu Shing Lee, Elizabeth Koh, Lauren Koh, Jing Yi Tan, Keith Tan Chiu Kian, & Titus Terence Song An Chia

Nanyang Technological University National Institute of Education, Singapore



[1] Corresponding author

## Abstract

A common pedagogical approach to foster creativity and develop talents among gifted students is after-school enrichment programs. However, in practice, there are several issues concerning the conceptualization and implementation of such programs. Since these enrichment programs are typically not part of the core curriculum, and scheduled outside curriculum time, these programs are relatively low stakes. As an after-school add-on program, such programs tend to be fragmented and ad-hoc in nature. Instead of a systematic program designed to stretch gifted and talented students, with the goal of developing their knowledge and competencies in breadth and depth, the programs that are implemented tend to be pitched at exposure level. To effectively meet the needs of the gifted and talented students, it is imperative to examine the intricacies of these programs. The fidelity has significant implications on the quality of the students' learning experiences. This article shares the issues and challenges encountered by they faced.



**Key words**

Gifted and talented, secondary school, enrichment programs, curriculum leadership, curriculum innovation

## Introduction

Enrichment programs organised within or after school hours has been a common pedagogical approach to foster creativity and develop talents among gifted students. Although there are substantial research on accelerated learning in Mathematics, particularly the Olympiads (Lubinski & Benbow, 2006; Lubinski, Webb, Morelock, & Benbow, 2001), there is a dearth of research on coherent approaches to differentiation for these students, as well as on the opportunities afforded by different types of differentiation in relation to enrichment and acceleration (White, Fletcher-Campbell, & Ridley, 2003). More often than not, implementation of enrichment programs is a feature of catering to the learning needs of the gifted and talented. Most enrichment programs aim to meet the needs of the gifted and talented students, foster creativity and develop talents among gifted students, and enhance the quality of the students' learning experiences. Unless the schools have in-depth understandings of the learning needs, in practice, the schools will face challenges concerning the conceptualisation and implementation of such programs. Hence, we see the recognition of the learning needs of these students is the fidelity to the IP mandate.

However, despite the best intentions of schools, most enrichment programs are typically not part of the core curriculum, and scheduled outside curriculum time, thus these programs have relatively low stakes. In addition, after-school programs tend to be fragmented and ad-hoc in nature are usually pitched at the exposure level. Core programs tend to be systematic and actively stretch learners in terms of breadth and depth of knowledge and competencies. To effectively meet the needs of the gifted and talented students, it is imperative to examine the fidelity of these add-on programs, as thier fidelity has significant implications for the quality of the students' learning experiences. This paper shares the issues and challenges encountered by a group of secondary schools in Singapore when implementing enrichment programs for their gifted and talented students. Based on this examination of their experiences, the study team have generated propositions and implicatioins for schools to reflect effects of the enrichment programs they conceptualised and implemented. In this paper, we view differentiating curriculum and instruction, whether within the curriculum time or out-of-class curriculum, as enrichment programs for high-ability students.

### Enrichment programs and diverse capacities among the gifted and talented

The exceptional performances of the gifted and talented have intrigued scholars and educators. However, the learning needs of the gifted and talented is not uniform. Not only do they have huge appetite and curiosity for knowledge and skills, they often exhibit the unique capacity to transform knowledge and skills into insights and products. Besides the core curriculum, purposeful and well-organised enrichment program as part of the diet can broaden the learning experiences of the gifted and talented. Hence, one cannot understand the purpose

and function of organising enrichment program without understanding the intellectual characteristics of the gifted and talented.

Different from the canonical conception of giftedness, the Marland Report (Marland, 1972) was a milestone that marked the paradigm shift in recognising the diverse capacities and potentials of the gifted and talented. Marland broadened the definition of gifted and talented. The Report defined giftedness and talent as children capable of high performance that include those with demonstrated achievement and/ or potential ability in any of the following areas, singly or in combination:

1. general intellectual ability
2. specific academic aptitude
3. creative or productive thinking
4. leadership ability
5. visual and performing arts
6. psychomotor ability (Marland, 1972, pp. 13-14)

While giftedness can be perceived as different type or domain, Rogers (1986) reviewed and noted that the gifted are generally different in degree, not type, of cognition. She concluded that gifted students are probably not employing qualitatively different, unique thinking abilities, but they tend to acquire and process information and solve problems better, faster, or at an earlier ages than other students. However, Butterfield and Feretti (1987) summarised and documented higher IQ persons have been found to have larger, more efficient memories; have larger and more elaborately organised knowledge bases; and use more complex and active processing strategies. In addition, Wilkinson's (1993) in-depth analysis of Wechsler Intelligence Scale for Children- Revised results taken by a sample of 9-year old gifted students revealed that gifted students showed greater frequency of extreme and more scattered subtest scores, as well as larger verbal performance discrepancies. All these research point to the diversity of capacities to learn among the gifted and talented.

Studies on gifted and talented students uncovered substantial details about their learning capacity which provide us with nuanced understandings that help educators to design appropriate enrichment programs. Below are examples of findings on students that can inform educators to design enrichment programs that exploit the learning capacities of the gifted and talented. In domains such as mathematics, Davidson (1986) found gifted upper elementary school children scored better than others on insight problems. These students were more likely to employ selective encoding, combination, and comparison in solving the problems as compared to average students. Moreover, Van Garderen and Motague (2003) found that gifted students used more visual-spatial representations when solving math problems. Among the extremely high IQ children, Lovecky (1994) found highly gifted children tend to make simple tasks more complex, have a need for extreme precision, understand complex patterns quickly, reason abstractly and have exceptional memory. Gross (1994) found the highly gifted have an early ability to transfer knowledge across domains, a verbally sophisticated sense of humour, and a capacity to make intuitive leaps. Silverman and Golon (2008) discuss the significant proportion of very high IQ students who may have specific learning disabilities, Asperger's

syndrome, or other cognitive processing challenges. Finally, Reis and McCoach (2000) also discussed extensively on the issue of underachievement among a proportion of gifted population. All these evidence are valuable in deisgning enrichment programs to promote learning among the gifted and talented.

Given the diverse cognitive characteristics, it can be an uphill task to conceptualize and implement purposeful enrichment programs for gifted and talented learners in school. Schools as a externally funded organizations often have to implement enrichment programmes with limited resources and therefore tend to end up catering to a sizeable group student needs. Hence, the economical consideration, the appeal of the organized program to the gifted students and their parents, as well as the programme's value to the society are just some of the many considerations that schools have to contend with. This has led to two natural modes of enrichments programmes being offered in the field of gifted education and these are briefly described next.

## Mode of enrichment programs for the gifted and talented

Broadly speaking, there are two modes of pedagogical approaches, namely acceleration and enrichment, to engage the gifted learners. Both approaches are valuable to serve the learning needs of the gifted and talented but they have different outcomes.

### Acceleration

The ability to learn fast is the hallmark of giftedness. Broadly speaking, there are two types of acceleration: *personal acceleration* in moving the student through the system more rapidly and *content acceleration* in moving the curriculum more rapidly to the student. The former types of acceleration include (1) early entrance into kindergarten, (2) grade skipping, (3) content acceleration in one or two subject areas while remaining with age peers, (4) continuous progress classes in which students can complete 3 years of curriculum in 2 years; while the latter include (1) compacting coursework so that it can be covered in less time, (2) testing out of courses or partial course requirements, (3) substituting fast-paced distance learning courses for the regular coursework, (4) taking advanced courses for credit in summers or after school, (5) early admission to advanced placement courses, (6) dual enrollment in high school and college, (7) early graduation and early enrollment in college, and (8) for extremely gifted children, radical acceleration (more than 2 years). Silverman and Golon (2008) have suggested that this range of accelerative options be made available to the gifted learners throughout the school year in order to ensure that such learners are challenged to perform optimally. Additionally, for the highly, exceptionally, and profoundly gifted children, they recommend providing several types of advancement throughout their educational career.

Accelerated learning is typically domain specific. This pedagogical approach is particularly useful for students who display inclination at an early age in specific domain in learning subject such as Mathematics. Understanding the gifted learners' need for such fast pace learning, Julian Stanley (1997) initiated the Study of Mathematically Precocious Youth (SMPY) at Johns Hopkins University. Using the diagnostic-prescriptive approach, this talent

development model provides mathematically precocious students with content that are the equivalent of six month to one year in advanced of a typical curriculum in the form of summer program or e-learning (Stanley, 2005). Among them who demonstrate superior learning capacity and well-adjusted psychology for college work may enter college in their early teens (Stanley, 1997). This form of accelerated learning is a combination of personal and content that enrich the learning experiences of mathematically precocious students.

Due to its radical pace of learning and concerns on its potential social adjustment difficulties, accelerated learning has been continuously scrutinized and hence has a sizeable body of empirical evidence to support its success (Lubinski & Benbow, 2006). Meanwhile, scholars also argued that there have been no studies that show that gifted children have better social adjustment when they are kept with their age peers. Research has continually demonstrated that gifted students receiving various acceleration options are as well adjusted as those who did not participate in accelerated programs (Caplan, Henderson, Henderson, & Fleming, 2002; Gagne & Gagnier, 2004). Colangelo, Assouline, and Gross (2004) interviewed accelerated students years later and reported that they were more ambitious and earned graduate degrees sooner than others. They acknowledge that they did not have to face boredom in the regular classrooms, and that they were socially well adjusted and academically challenged; hence they praised that it was an excellent experience for them.

**Enrichment**

There have been a wide range of enrichment models for the gifted and talented. More than a dozen of enrichment models has been collated by scholars (J.S. Renzulli, 1986; J.S. Renzulli, Gubbins, McKillen, & Little, 2009). These enrichment models can be implemented either within the curriculum time or out-of-class programs. Often, schools encounter much difficulties to enrich curriculum within the standard syllabi for reasons such as staff lacking professional knowledge and insights to embed elements of differentiation in the curriculum and instruction that are aligned with the core curriculum. In contrast, it is more convenience to organise the out-of-class enrichment models that may or may not be associated with the core curriculum. In fact, the form of out-of-class enrichment programs can be rather attractive to teachers and parents. For example, Renzulli's Schoolwide Enrichment Model (1986), Schlischter's Talents Unlimited Models (1986) and Treffinger's Level of Services Model (1986) promote the whole school approach in fostering talents. Such inclusive way of enrichment models are attractive and also highly appeal to teachers and parents.

Although it is easy for members of public to see the form and the implementation process of enrichment programs, provision of enrichment programs is about the traits of the learner the model aims to nurture. There are theoretical underpinning in all these enrichment programs. For example, Talents Unlimited Model was based on Guilford's (1967) research on the nature of intelligence with full description of specific academic ability. As a package, it comes with instructional materials, professional development for teachers and an evaluation system for assessing students' thinking skills development (Schlichter, 1986). The model was found associated with students' creative and critical thinking (Schlichter & Palmer, 1993), and with young children in an English setting (Rodd, 1999).

Another example would be Feldhusen's Purdue Three-Stage Enrichment Model for Elementary Gifted Learners (PACE) and the Purdue Secondary Model for Gifted and Talented Youth. The Purdue Secondary Model is a comprehensive structure for programming services at the secondary level. It has 11 components supporting enrichment and acceleration options: (1) counseling services, (2) seminars, (3) advanced placement courses, (4) honors classes, (5) math/ science acceleration, (6) foreign languages, (7) arts, (8) cultural experiences, (9) career education, (10) vocational programs, and (11) extra-school instruction (Feldhusen & Kolloff, 1986; Feldhusen & Robinson-Wyman, 1986; Moon, Kolloff, Robinson, Dizon, & Feldhusen, 2009). Each option is meant to facilitate the learning of high-ability students at different stage of growth. Hence, when crafting an enrichment program, placing significance on the fidelity and integrity of the programs is imperative.

## Objective of this article

Despite of given the opportunity to modify curriculum and instruction for high-ability students, schools that run the integrated program (IP) seemed to encounter great difficulties to explore, experiment and create the relevant learning experiences. The notion of enrichment is generic enough to invite open discussions in the IP schools; however, these schools were very much anchored in their own tried and tested successes. Given the habit of covering the syllabus among teachers, teachers seldom explore the notion of enrichment, experiment ways to enrich the curriculum, and make connections between curriculum and instruction. Rather, teachers spontaneously resort to accelerated teaching for these high-ability students. The objective of this paper is to illustrate how school leaders, curriculum leaders and teachers understand the learning needs of the high-ability students and how they interpret the desired learner outcomes in designing an IP curriculum to challenge them. We analyzed how four schools conceptualized and enacted the enriched curriculum that facilitated the goals of IP. The study was interested to gather evidence on the whether school leaders, curriculum leaders, and teachers were competent in reframing the curriculum and instruction. The ultimate aim of this article is to provide insights about the people, process, tools, and experience that might help policymakers and practitioners to conceptualize and implement a comprehensive and stimulating IP curriculum and instruction for high-ability students.

## Research context

A key concern of the Singapore teaching force is the emphasis on teaching content over conceptual understanding and thinking (Tan, Ponnusamy, & Quek, 2017). To re-orientate approaches in teaching and learning, in 2004, the Ministry of Education (MOE) introduced the Integrated Program (IP) to "shift the emphasis of education from efficiency to diversity, from content mastery to learning skills, and from knowing to thinking" (Ministry of Education, 2002b, p. 2). The objective of IP is to broaden the scope of curriculum so that teachers have more room to explore and experiment with a curriculum that fosters deeper understanding and

that develops broader skills for high-ability students. Any discussion about curriculum raises questions about what and how human knowledge is to be acquired during education, which in turn has implications for planning and implementation. With MOE's policy of allowing IP schools to broaden students' learning experiences, the content in the IP is expected to go beyond that which is dictated by the national school syllabi. In this sense, the curriculum perspective adopted goes beyond seeing the curriculum as a body of knowledge to be transmitted to learners. Furthermore, removing one national examination out of the IP implies then that IP curriculum would move away from the linear, product-focused Tylerian (1949) model of curriculum. The perspective of curriculum, arguably therefore takes on that of curriculum as process, so that the IP curriculum is "an attempt to communicate the essential principles and features of an educational proposal in such a form that it is open to critical scrutiny' (Stenhouse, 1975, p. 4). Taking on this perspective, this study therefore endeavored to study teachers' and curriculum leaders' efforts as they actively planned for and negotiated an educational proposal, particularly an enriched curriculum, to put into practice for IP learners.

In the course of 6-year study, although school leaders and teachers had heeded such calls to meet the educational needs of high-ability students through developing a school-based curriculum, our analyses showed that teachers generally needed help to shift their pedagogical practice and they tended to resist change due to the high-stakes examination. Nevertheless, at the last two years of this study, among the school leaders, there were signs of realization that their long known academic success and performative culture is limiting pedagogical changes that would otherwise facilitate the deeper learning of high-ability students.

The Integrated Programme (IP) allows students in the programme to skip the General Certificate of Education (G.C.E.) O Level Examinations at the end of Year 4 and to sit the A Level examination or the IB examination at the end of Year 6. The study reported in this paper involved four schools (pseudonymous), namely: Pawai School (PS), Istana School (IS), Marina School (MS), and Sentosa School (SS), that offer IP at the secondary level.

## Method

### Research Design

This multiple-case mixed-methods study was a 6-year longitudinal investigation. This paper is based on part of the qualitative data obtained from the larger study that involved teachers and students concerning the broadened scope of the IP curriculum and how teachers used the extra time to explore and experiment with a curriculum that fosters deeper understanding and that develops broader skills for high-ability students. This approach emphasizes the hands-on involvement of school leaders, curriculum leaders, and teachers in actively experimenting and changing curriculum as they negotiate the political and cultural discourses that surround curriculum (Ylimaki, 2011). Hence, how the curriculum actively moved away from tried-and-tested processes and strategies formed the key focus of the analysis. Using grounded theory analytic methods, the study examined the emerging propositions of the proactive and adaptive approaches to curriculum innovation.

**Participants**

The participants involved school leaders, curriculum leaders, teachers, and students from four schools. The study involved Year 1 students who were enrolled in the Express programme (OP) and IP from 2013 to 2018 cohorts.

Teachers and school leaders nominated student and teacher participants respectively. All teacher participants satisfied *at least one* of the following criteria set out at the recruitment stage of the study: (1) provided direction for the IP – had clarity of the mission and vision, (2) provided leadership for instructional programming in curriculum matters – design and development of curriculum framework for core/enrichment, resources and assessment, (3) provided leadership for colleagues in IP matters at subject and subject-related core programme and enrichment, (4) was responsible for non-cognitive development for IP student – affective education , (5) taught IP students since the inception of IP, and (6) was in first year of teaching IP.

The study involved school leaders, curriculum leaders, teachers and students in focus group discussion (FGDs) and interviews. The study was designed to begin with a cohort study in Phase 1 (2013-2015), and a panel study in Phase 2 (2016-2018) as a follow-up. In phase 1, the 2013 Year 1 cohort formed 8 focus groups from both OP and IP for discussion every six months. Each FGD consists of 6-8 students. Phase 2 panel study aimed to deepen our understanding on the beliefs, processes and outcomes of the IP. The schools nominated 24 additional students who were Year 1, 2, 3 to participate in one-to-one semi-structured interviews. Similarly, nominated teacher participants also formed 8 FGDs in Phase 1 and subsequently, a panel study featured one-to-one semi-structured in-depth interviews with the school leader and 5 teachers were conducted 3 times in Phase 2; the same teachers were interviewed unless there was a change of personnel during the study. The research team also observed IP and Express classes in 2013 and 2014 to collect empirical data on enactment in the classrooms (refer to Table 1 for an overview).

Table 1. An overview of number of participants

| Participant | Phase 1 (2013-2015) | | | Phase 2 (2016-2018) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | FGDs | | | FGDs | | Interviews | |
| | Overall | OP | IP | Overall | OP | IP | OP | IP |
| School leader | 4 | | | 6 | | | | |
| Curriculum leader | 4 | | | 4 | | | | |
| Student | | 128 | 128 | | | 32 | 24 | 24 |
| Teacher | | 64 | 64 | | | 32 | | 24 |

Note: FGD: focus group discussion; IP: integrated program.

**Data Sources**

The schools' mission to deliver IP that broaden the scope of curriculum so that teachers have more room to explore and experiment with a curriculum that fosters deeper understanding and that develops broader skills for high-ability students (Ministry of Education, 2002a, 2011). The school-based IP curriculum within each school was collaboratively conceptualised and designed by school leaders, curriculum leaders, and teachers. The IP aims to provide a six-year

Secondary and Junior College (JC) education for academically-strong students who can benefit from a broader learning experience, and also aims to stretch students' potential in non-academic aspects that are beyond the academic curriculum(Ministry of Education, 2002a). The fundamental idea is to develop competencies and dispositions of high-ability students beyond the high-stakes examination requirements. Each school could achieve the IP goals by scoping and structuring programs to nurture high-ability students enrolled in their schools.

The IP curriculum as described by the four schools included learning experiences within curriculum time, as well as out-of-class enrichment programs. Both kinds of learning environments offer crucial developmental experiences for the talented and gifted youth (Joseph S Renzulli & Reis, 2012). This article focuses on the thick descriptions of IP curriculum and instruction development processes that arose from the focus group discussions, and conversations in the interviews. The next section discusses a description of the IP scenarios in the four schools created in their attempts to offer broader leaning experiences. This is followed by four propositions that we put forward to better understand the impact of developing and implementing enrichment programs for high-ability learners.

## Two Scenarios used by schools to broaden learning experiences

Providing enrichment programs for high-ability students is a form of curriculum innovation. It is a socio-cultural process that cannot be reduced to a single factor within any school context. Despite their pupils' stellar record of accomplishment in state examination, and the successful application through the Ministry of Education to implement IP alongside with Express program, the four schools in this study faced issues and challenges in reframing and implementing enrichment programs. Two scenarios were evident from the analysis of the approaches used by the participating schools as they deliberated and negotiated their respective contexts in reframing curriculum and instruction to broaden student learning in academic and non-academic areas (Ministry of Education, 2002a, 2011). The analysis of the data showed that the ways that schools configure IP has impact on the ways that they went about offering a broader learning experience. It was also clear that each scenario and configuration highlights the belief underpinning the decisions made on the structure of the enrichment programs, the process in which the structure installed, and the content and instruction of the enriched curriculum.

### Scenario 1

Given the task to implement two learning pathways (Express and IP) under the same roof, the school leaders were concerned of academic and social division.

> *We are not taking the track of Gifted Education Program approach. We are not trying to give more to those who have more. Because [we] are known for holistic education, a balanced education.*
> (School Leader)

School Leader in SS therefore articulates that the IP for him was not focused on cognitive engagement for only high-ability learners recruited into the IP, as is one of the goals of the Gifted Education Program (MOE, 2019)[2]. The IP in SS aimed to be distinctly different as students could move between the IP and Express programs seamlessly. Hence, the school was open to enroll students into the IP at Year 1, Year 3 and Year 5, and therefore the need to ensure smooth transition between both learning pathways became an overriding feature of curriculum planning and implementation in the school. .

> *We need to allow for transfer of students both directions … so at the end of Secondary 2, they have opportunity to cross over.*
> (School Leader)

Learning from the past experience, the leaders wanted to ensure teachers did not practice accelerated learning.

> *… some teachers and some subjects that bring down content and skill sets in upper sec, just push them harder and do more whereas others will be more enlightened approach disposition and skill sets.*
> (IP Head)

After much deliberation of the school history and social context, at the onset of IP, the school leaders decided to align the IP curriculum between the two learning pathways at the foundation years. The alignment included keeping the core curriculum and end-of-year examination similar for both pathways.

> *… in the past we try to develop talent development in a whole class setting, there is a bit of confusion of what does stretching really mean. … So we try to make it clearer by saying that level 1 learning is really packed at the O level content and skills per se but saying that within the level 1 learning, when you are in IP class versus OP class because of the nature of students, the way you teach and the way you assess could be differentiated.* (IP Head)

After anchoring the common ground for both learning pathways, the school also conscientiously crafted a suite of enrichment courses for students in both programs. What differentiated the Express and IP is that Express students could choose to participate in the enrichment, while it was compulsory for IP students to be involved in the enrichment classes created for them.

> *all IP students will be doing IP or talent discovery … So if they get selected then they will get chosen. Otherwise they can choose discovery module, … . So they will either be in talent or discovery*

[2] The Gifted Education Program has six stated goals with intellectual rigor being the first.( For other goals and details see https://www.moe.gov.sg/education/programmes/gifted-education-programme/rationale-and-goals)

> *[program]. … we try to … [blend] together with the O level track students as well. So the O level track students will have a chance to avail themselves with these opportunities also if they happened to be interested or have bended talent for that also*. (IP Head)

Despite of the attempt to build a flexible structure to cater to the needs of both IP and OP students while enabling OP students to cross over, when implemented, it is constraining. The presence of a dual track structure and the lack of differentiation in Level 1 seem to be counter-intuitive in promoting IP students' learning. This structure creates tensions in curriculum planning and classroom practice for teachers who are teaching IP classes.

> *… in the past, when you talk about like Talent Development, … the top classes, usually we do it in a way of acceleration and more, I mean more content. So I think parents may have feedback that is quite stressful for the top classes or best class. … The Sec 1s, both Talent and Discovery is the same. But we can actually differentiate in terms of Level 2, means the Talent and Discovery portion, and also the ISE.* (Teacher)

Focus group discussion with students showed that there is certain level of dissatisfaction as the students have an appetite for deeper learning through differentiated curricular and opportunities for exploration and experimentation in their learning.

The school leader was strategic in addressing the rooted culture of placing great emphasis on exams within the school. The introduction of alternative models such as the program offered by Harvard's Idea Translation Lab, and design thinking, were attempts to re-culture existing learning and teaching practice. Although these programs had some influence on current practice and observable changes in teachers' pedagogy, the inductive curriculum that emphasise exploration and experimentation of ideas used in these programmes requires a greater investment of time in order to build these thinking dispositions in the learner and teacher. Unfortunately, these add-on programs could not be sustained after the first few years due to the high cost of continuing to run the collaborative programme and the lack of pedagogical expertise within the school.

> *I'm taking the [program A] and he is taking the [program B]. Actually from experience, Sec 1 is quite hard to pick up [program A] because some of those who did well very well in PSLE …, ok, may not be that, …, passionate for [the subject]. So we have not found good way to actually sieve up those who are more talented in [the subject] or passion, I mean, able to do, how to say, research work. So we have decided that still based on PSLE score…* (Teacher)

**Scenario 2**

Unlike scenario 1 whereby the six-year IP is implemented in the same school and had an extensive enrichment programs, this n scenario 2, an alliance firstly involved three schools, each with its own rich history and strong alumni, to implement Express and IP learning pathways in their respective school for the first four years. The IP students from these three schools would then converge to one Junior College at Year 5 and 6. Besides having rich cultural heritage, all the schools have had a long-standing reputation for providing holistic educational experiences that emphasized character development, values inculcation, and academic excellence. Due to the performing history and culture, parents have high expectations on the examination results produced by the schools. However, all three schools expressly indicated that they had distinctly different curriculum for the IP and OP programs, with some leeway given to students to crossover between programs based on classroom performance. Nevertheless, in practicing the revolving door policy whereby students in Express and IP could cross over the programs, the schools faced challenges in planning IP curriculum that were distinctively different from the Express program.

> *Actually for us because we have both the O levels and the IP, we must also take care of our O level students. So we don't have too much distinction between both. _So in terms of curriculum, yes_but in terms of the opportunities or in terms of the deployment of the teachers, we also don't want to be too obvious*. (Curriculum leader)

> *For lower sec, there's no differentiation between OP and IP. The, the differentiation comes only at level two. So level one everybody does the same thing*. (Curriculum leader)

Clearly, while there was a wish to keep the IP and OP curriculum different, the innovation made on the IP curriculum were limited by several factors. The primary factor was the expectations for stellar performance in high stakes examinations, which resulted in not much change to the core curriculum. Innovation was also impeded by the need to ensure ease of cross over between the IP and OP as well as the optics of assuring both the IP and OP students and parents that their children were not being shortchanged in anyway.

Working as an alliance of IP schools also meant that there were expectations on sharing of expertise, resources and programs. The schools had to collaborate in making curriculum decisions. The diverse student profiles in these schools also meant achieving unanimous curriculum decisions were difficult. This, coupled with the need to balance each school's historical and social context, makes it challenging for the schools. For example, in order to ensure alignment of assessments among the alliance of schools that later articulated to the junior college, the schools made joint decisions about the curriculum content. After which, each school discussed pedagogy and assessment in their school context by subject and level. For instance, the schools shared Science lesson plans and mode of assessment via a website. Though the scope and sequence may be similar across the schools, each school could differ in its implementation.

> *…, we have a IP Committee which was largely made up of the HODs of the different academic groups …. The HODs nominated members from their Department … specially handpicked … to sit in this Committee. So this Committee will be key in the operations, the Implementation Operational issues of the IP. So if there is issue that we discussed at our level then they will need to bring back to their Department sometimes for discussion*. (IP Head)

The relative inexperience of the teachers in the program means they value expert advice on not just the writing of the curriculum, but also on the design of the activities and the pedagogy with which to approach the teaching. Much mentoring and leadership is required to enhance the expertise of the staff. However, the expertise in the schools we studied was presently not available (Elmore, 1995). Most teachers still hold the view that the rigor of learning in to meet the exam requirements which has been deferred two years. Hence, despite of the removal of high-stakes examination for IP students, the policy did not change teacher belief that these students can be stretched.

> *…, I'm not sure if you notice, this batch of IP, they're not really the IP students …, all of them not knowing they will do, go to the IP, go to the IP track, is because I think of the sec two results. And then they're streamed into either they're doing IP or OP.* (Teacher)

In addition, school leaders were careful in ensuring teachers were not overwhelmed by the changes brought in by IP. Hence, the approach to handle changes was gentle and gradual. Teachers had difficulties seeing differences between Express and IP students' learning needs.

> *Teachers seemed to find IP and OP students cognitively similar, although they had higher expectations from the IP students (who were deemed to be more motivated).* (School Leader)

The focus of the program was on a wide spectrum of authentic and future-oriented learning experiences that ensure students were well equipped with the competencies necessary to navigate in a complex world. In realizing this vision, the three schools implemented a combined seminar where IP students from these schools come together. The schools also had student exchange programs among themselves. In providing opportunities for rigorous and deeper learning, the school leaders preferred teachers to approach it through questioning and feedback.

> *…what I intend to achieve here…that there's engagement. Teacher's engagement.* ***Improving the quality of the interaction in the classroom*** *'cos in the kind of questions that they ask that there's thought put into the questioning right? There's not just plain acceptance of whatever it is or plain group work where students just learn from one another****… just share but there's no input****. You see? So the adults must be professional, who are going to give that sign posting for deeper learning by the feedback given that's why we check*

*the files to see what is there…So that, not just in the presentation but the idea is deeper and there's research that informs*. (School Leader)

In addition to the aforementioned combined enrichment programs, each of these schools offers a range of enrichment programs. However, these programs could be one-off experience and had no follow-up or in-depth experience.

*there was one module on XXX that was really unique (trailing off) but I didn't go for it, but … I think it was pretty cool , but* ***that's just a one-off thing****, once in a year.* (Student R)

*but* ***the main problem is that they isolate these enrichment activities*** *so like they keep these enrichment activities as purely enrichment and then after we finish these activities then we go back and then we have oh, all these tests, …, then we're suddenly like, what was the point of this academy?* (Student G)

Above quotes showed that even the learners were able to recognize that the discrete learning experiences and were not very satisfied.

In implementing the dual programs under the same roof, the schools were managing the delicate and subtle differences between the two learning paths. There was a need to manage the expectations on achieving the high-stakes examination and the IP objectives. In other words, it is ensuring academic rigor without compromising knowledge exploration. Hence, it was an uphill task in accommodating and coordinating standards and expectations on IP curricular among the schools that differ in student profiles, as well as its historical and social contexts.

**Four Propositions about Enrichment Programs for High-ability learners**

Our analyses showed that people, process, tools and experience are the elements that shape the development and implementation of enrichment programs. *People* are stakeholders such as school leaders, teachers, students and parents. All stakeholders' seek to fulfill their needs in the change process, and how they value the innovation. *Process* is the re-alignment of school vision and mission to the innovation. *Tools* are the knowledge and expertise needed to achieve the goals of the innovation. *Experience* is the outcomes and the risks involved in the change process. These four elements intertwined and interact with one another.

Based on the scenarios described, apparently, the enriched IP core curriculum was rather fragmented, under-pitched and lacking in breadth and depth. A common strategy to buy time to conceptualize and implement the enriched IP curriculum was crafting and implementing the out-of-class enrichment programs, as these programs were relatively low-stakes. When the schools are unable to recognize the key curricular vision and framework, school leaders and teachers grapple with high-stakes educational change issues. Hence, there are observable lack of coherence between the wtihin class enriched IP curricular and the program structures, as well as between the within class enriched core curricular and out-of-class enrichment programs. As these ad-hoc out-of-class enrichment programs were not aligned to the enriched core IP curricular, it resulted in one-off experience that did not help high-ability

students to make much sense of their learning. The persistent pitching of out-of-class enrichment programs at the exposure level did not contribute to nurturing talents of these students. In crafting a suite of defensible enrichment programs, whether within or out-of-class curricular, it is imperative to consider the following professional standards -- clarity, coherence, alignment, and continuity (J.S. Renzulli, 1986). In short, we view fidelity of implementing enrichment programs as suitability and appropriateness to enhance the intellectual traits of high-ability students. It is not a direct adoption of any model in the literature.

In analyzing the reasons for situations where schools were unable to meet the professional standards in the above scenarios, four propositions emerged.

**Proposition 1: Ambiguity in recognising the intellectual needs of high-ability students limits the clarity of enrichment programs**

The IP caters to academically strong students who can benefit from engaging in broader learning experiences during their Secondary and Junior College years through the provision of a seamless six-year pathway. This way, high-ability students who enrolled in the IP are exempted from taking the high-stakes national examinations at Year 4, so that they have time "to think, reflect and explore" (Shanmugaratnam, 2002, p. 3). In getting the green light to implement IP, schools are expected to redefine the existing educational structures, redesign teaching and learning processes and reshape classroom practices.

With the inception of IP, the schools embarked on a sense-making process by examining the existing vision, mission, and strategic direction. The challenge for all these schools was to recast curriculum so that it was able to address the variable needs of diverse learners under the same roof. Despite having the task to provide an enriched IP curriculum for the high-ability students, the schools continued to believe in the tried-and-tested deductive curriculum and practice that brought them the performance successes over the years. As such, the contextual and socio-cultural elements such as the extant exam culture influence how schools interpret and reconfigure the enriched IP curriculum.

Downplaying the differences between Express and IP learners was another reason for the lack of clarity and coherence of enrichment programs in these schools. Our analyses showed that the school leaders and teachers were concerned about stigmatisation and therefore deliberately avoided any grouping practice that would point out differences between these two groups. However, upon deeper examination, the informants acknowledged that references to such differences are unavoidable in a school that caters to the learning needs of diverse learners. Clearly, another layer of work that needs to be done here as there is a need to learn how to limit the fallout from the negative stigmatisation that stems from having both the Express and IP 'under one roof', whilst at the same time providing for learners with different needs with distinctive learning experiences. Since the schools had limited aspirations to distinguish the two learning pathways, it hindered schools from capitalizing on and synergizing with deeper curriculum innovation.

In this analysis, we see the withholding of beliefs about curricular and academic success posed limitations to explore and understand the learning needs of Express and IP students. As such, there was limited evidence on how high-ability students were challenged in the enrichment programs.

**Proposition 2: Nascent knowledge and skills in developing enriched curricular limits the coherence of enrichment programs**

In planning and developing enriched curricula to meet the learning needs of high-ability learners, teachers were challenged to take multiple risks. However, the spaces for curricular innovation offered by IP could have been capitalized and actively leveraged upon for curriculum and pedagogical change. Upon the introduction of IP school status, teachers faced multiple demands and took many risks when crafting the enriched curricular such as teachers' feeling that they are short-changing students for not building the basic competencies and having time to sufficiently prepare for the ultimate G.C.E. "A" Level exam. These teachers had to align the curriculum development processes between the accustomed "O" level examination teaching and learning culture and the move to providing for broader learning experiences in the IP. That is the need to design a curriculum to facilitate the possibility of transference between "O" level and IP programs. In other words, in modifying the curricular, teachers not only had to face multiple demands of meeting the learning needs of high-ability learners, but also facilitating student capacity to learn in collaboration among the alliance of schools or between the first four years and last two years in one IP school. Additionally, the enriched IP curriculum and pedagogies are also challenged by the multiple demands for meeting the needs to build 21st century competencies and inculcate the school values among students.

Moreover, the presence of high-ability learners provides a contextualized environment for teachers to rethink and re-configure the curriculum and their pedagogical practice. Typically, teachers focused on differentiating content by adding more of *what* they are teaching instead of *how* they have been teaching. However, in the process of interacting with high-ability learners, teachers realized the add-on might impede the learning of high-ability learners. Though the learners have the appetite to learn conceptually, they also need teachers who know how to scaffold for connections and be able to teach at an appropriate pace for deeper understanding. In understanding these needs, teachers adjust the design of the curriculum and their pedagogical practices.

In spite of the practice of distribute leadership and autonomy for teachers to design and execute the IP curriculum, the middle management personnel and teachers often expect the school leaders to set direction, initiate change and delineate key aspects of the IP. On the other hand, given the IP vision is to deepen and broaden learning experiences, school leaders entail greater contribution from teachers and particularly the middle management personnel. Such lapses and gaps in the perceived roles create tensions amongst teachers, subject specialists, and IP leaders and in turn limit the coherence when interpreting and reconfiguring the IP curriculum and instruction.

**Proposition 3: Weak knowledge, skills and expertise in managing school-based enriched curriculum limit the alignment of enrichment programs**

Implementing a suite of enrichment programs needs clear goals, alignment and long-term planning. An attempt to align the enriched core IP curriculum and out-of-class enrichment programs helps to achieve clear purpose and goals of the program, as well as building ascending intellectual demands in terms of knowledge and skills in participating high-ability students. When done this way, the enrichment programs can deepen learner experiences and avoid fragmented, touch-and-go, one-off experiences.

A way to align the enriched IP core and out-of-class enrichment programs is to review and refine the IP curriculum. Although the mechanisms and processes for reviewing and refining curriculum are important aspects of school-based curriculum development, analysis in our study showed that there was no evidence of the articulation of such basic features, mechanisms and processes. Instead of planned processes and mechanisms, the teachers' experiences in writing and updating the curriculum emerged as the iterative process of reviewing and refining curriculum. The disadvantage of such a process is that it provides an ad hoc review about the curriculum and pedagogy based on students' response to the teaching and learning. Moreover, such intuitive mechanism is highly dependent on teacher's knowledge on curriculum design and sensitivity to the learning needs of high-ability learners. As such, a teacher who holds a fixed mind-set about the curriculum and pedagogical practice has a great sense of discomfort. While viewing curriculum as praxis (Grundy, 1987) where curriculum is constantly deconstructed and reconstructed as an emergent process is a necessary form of responsive teaching, such review and refinement of curriculum process is not equivalent to that of a systematic curriculum review. During the data collection stage of this project, review and refinement process of the curriculum and programs for high-ability learners was propelled by student feedback about their workload, rather than a well-conceived curriculum review structure and process.

**Proposition 4: The absence of curriculum vision limits the continuity of enrichment programs**

Continuity in implementing enrichment programs concerns the level of sophistication in the enriched curricular. While the four schools were implementing their suite of out-of-class enrichment programs for their IP curriculum, there was a clear absence of curriculum vision. Research showed that having a curriculum vision helps to anchor the curriculum and also provides direction to guide teachers (Tan & Ponnusamy, 2014).

IP students who were in the program after two years identified that the core and enrichment curriculum had a different emphasis with the enrichment focusing more on deeper learning and 21$^{st}$ century competency building. Overall, this leads students to find that they are going through the mechanisms of these 21$^{st}$ century processes and did not have opportunity to delve deeply in it.

This limited shift in core curriculum pedagogical practices is also evidenced in our lesson observations data collected as a part of this study. Curriculum specialist observed and rated the lessons in the enriched IP core curriculum using the Classroom Observation Scale, which measured eight dimensions. The average of ratings across all the lessons observed at two points in the study consistently pointed to a reduced focus on thinking and teacher questioning. This data triangulates well with the student report point about the instructional practices in the core curriculum being more teacher-driven than in enrichment.

The analyses imply that teachers have not redesigned the core curriculum sufficiently towards encouraging deeper learning; rather there seems to be a prevailing emphasis of covering content, and suggests that pedagogical practices are still examination-focused. Second,

in the redesign of the curriculum, due to the diversity and eclecticism of the curriculum, the competencies and skills that students are supposed to learn are not made visible and/or not articulated in a clear manner. Students feel unsure of what they have learned.

## Discussion

Past studies showed that the process of implementing school-based curriculum is complex (Dimmock & Lee, 2000; Gopinathan & Deng, 2006; Snyder, Bolin, & Zumwalt, 1992; Tan & Ponnusamy, 2014). It involved people, process, tools and experience. Clearly, the analysis of this study suggests that the school leaders, who do not have limited experience and tools to implement the enrichment programs, need the appetite to take calculated risks in making the curriculum change process possible. This means they have to lead for consensus on what to change and figure out how to form effective teams to reconfigure the existing working structure, model and process.

In contrast to the argument that holistic school design offers a more promising means of forging appropriate curriculum leadership and structures (Dimmock & Lee, 2000), Scenario 1 of our study showed that without knowledge, skills and expertise in implementing enrichment programs for high-ability students, even the school leader who tried to conceptualize a holistic school design, the programs floundered. This suggests the need for a more pervasive and systematic shift of pedagogical practices, both in the IP core and enrichment curricular to promote deeper learning. For example, although there is a need to cultivate 21st century competencies among Express and IP students, the level of sophistication might differ due to learners' capacity.

Our findings also suggest that one should not assume the three curriculum implementation approaches, namely fidelity perspective, mutual adaptation, and enactment, proposed by Snyder et al. (1992) are the silver bullets to the issues emerged in our study. Our findings allude to the fidelity perspective whereby there is an existing culture and high comfort level of reproducing planned and intended curriculum exists among school leaders and teachers. Hence, school leaders, curriculum leaders and teachers were uncomfortable to deviate too much from the standard curricular. The schools minimized the mutual adaptation approach as their attempts to interactive and negotiation process gave rise to multiple challenges among alliance schools or education partners. However, schools found enactment of curriculum implementation together with school leaders, teachers, and students an organic way to enrich the programs. These findings in our study showed that in order for mutual adaptation and enactment to take place in curriculum implementation, the intended shift must be made explicit and also there should be extensive discourse among teachers and students. An informed programmatic direction with specific goals provides the backings to forge a culture and shared language for deeper inquiry and learning. As such, the implementation of enriched IP curriculum, whether within or out-of-class settings, can drive pedagogical change.

Bolman and Deal (1991) examined leadership and management effectiveness and found four frames used among school leaders and administrators. These are the structural change frame, human resource frame, political frame and symbolic frame. According to the authors, school leaders typically used one or at most two frames in their management. Their study found Asian school leaders and administrators used mostly structural and human resource frames as compared to the Western counterparts. Rarely do they value symbolic frame.

In our study, at the start of their IP journey, although the schools were busy restructuring and solving organizational problems with new policies and rules, they only relied on existing information and knowledge, instead of developing deeper understanding of high-ability students and their specific learning experiences. Instead of generating broader criteria to gauge the progress of learning and performance, these schools also prioritized high-stakes academic performance. Adjustment school structures to accommodate enrichment programs did not help the students to deepen their learning.

In valuing working relationships and feelings of teachers in the curriculum change process, the schools either choose a slow pace to implement the enriched programs, or enroll teachers for training workshop to reskilling. Ideally, all these should be anchored on teachers' willingness to participate in implementing the curriculum. Otherwise, choosing a slow pace in change might give teachers the impression that they have nothing to do with the change while enroll teachers in training workshop without clear objectives might lead to unwilling participation.

The use of political frame happened in both scenarios as the IP schools attempt to develop the enrichment programs. Instead of focusing on facilitating the learning needs of high-ability students, the discussions land itself at the coordination of joint enrichment programs and moderation of mode of assessment.

There was no use of symbolic frame in delineating the enriched IP curricular. Due to the limited knowledge, tools, and aspirations for the IP students, the schools were unable to adopt broader curriculum orientations that address issues of complexity and depth of knowledge in the enrichment programs. Since the schools had limited knowledge in interpreting the IP goals and translating these goals in their curriculum, the purpose of the enrichment programs was rather short term, lack continuity and did not articulate into level of sophistication the schools could have helped high-ability students to achieve.

There is a need to change teachers' attitude towards change especially in encouraging them to look at students in fresher, more enlightened ways. School leaders also need to be cognizant of and address the tendency of teachers to leave decisions up to key personnel. At this initial stage of implementing enriched curriculum, it is recommended that leaders and curriculum teams foster both bottom up and top-down approaches to curriculum development. This will help to counter the existing teacher culture of expecting curriculum to be changed from outside, and instead empower teachers to make planned changes to curricula and pedagogy in ways that will engender deeper learning. While it may be difficult to remove the perceived stigma that learners face being in different programs, it may be healthier to

acknowledge that there are differences that exist amongst learners and that there would have to be different programs in a school that intends to cater to diverse learners. Furthermore, rather than downplay differences, schools may maintain social coherence by engaging both Express and IP learners through dialogue and common activities. Such engagement when carried out in an open and transparent manner can inform the curriculum innovation process as well as provide opportunities to build deeper greater understanding between the groups of learners. In addition to this, there is a need for school leaders and teachers to be clear and neutral when communicating the rationale and decisions made to curriculum for Express and IP learners, as well as to other stakeholders.

In facing the multiple risks and demands in innovating curriculum to provide broader learning experiences, IP schools could anchor its curriculum on a broad vision to provide a sense of direction to teachers. This broad curriculum aims to provide the space for teachers to interpret and reframe the curriculum. Curriculum innovation should be the priority in the change process. For example, there should be priority on structured time slot for teachers to tease out the necessary curriculum matters collectively as a team.

IP schools should consider putting in place the mechanisms and process for review and refinement of IP curriculum. There is a need to build capacity for teachers to be the designers of learning experiences and environment as well as be assessors of what they designed. Thus, teacher knowledge and literacy about curriculum and program design also include curriculum evaluation.

## Conclusion

School leaders, curriculum leaders and teachers need to be aware of the intellectual strengths of high-ability students in order to provide an appropriate diet to grow intellectual capacity. Only if the schools could anchor the enrichment programs, whether the enriched core or out-of-class enrichment, based on the intellectual traits of these students, the broader learning experiences would affect high-ability students more. Perhaps, it is time for schools to face the reality that perfection in academic performance does not give rise to lifelong, life-deep, and life-wide learning. Besides, promoting academic excellence, schools should conceptualize enrichment programs that are not only compelling to high-ability students, but also systematically foster sustained learning. However, Elmore (1995) succinctly point out the difficulties schools faced include the need for the schools to require content knowledge and pedagogical skill that few teachers presently have, and that the process to reconfigure curriculum and instruction challenges certain basic patterns in the organization of schooling. He also highlighted that neither problem can be solved independently of the other, nor is teaching practice likely to change in the absence of solutions that operate simultaneously on both fronts.

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## ORCID iD

Liang See Tan https://orcid.org/0000-0001-7468-7683

## Note

1. The Gifted Education Program has six stated goals with intellectual rigor being the first. (For other goals and details, see https://www.moe.gov.sg/education/programmes/gifted-education- programme/rationale-and-goals)

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