Ministry of Education
SINGAPORE

report of the
Secondary
Education
Review and
Implementation
(SERI) committee

Report of the Secondary Education Review and Implementation (SERI) Committee

December 2010

Contents

Executive Summary

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Introduction

1.   Following the recommendations of the Primary Education Review and Implementation (PERI) committee to enhance primary education, the Secondary Education Review and Implementation (SERI) committee was formed to review how our secondary education could be improved.

2.   SERI recognises that we have a strong education system. Our primary schools provide a firm foundation for a sound education for all our students through an emphasis on knowledge acquisition, development of thinking and process skills, and inculcation of fundamental values. SERI believes that at the secondary level, we must continue to provide a broad-based education that builds on and strengthens the foundation laid in primary schools, to give our students a range of experiences and the opportunities to develop the skills and values they need for life. Secondary schools should also prepare students for various pathways and specialisations at the post-secondary level.

The Social-Emotional Development of Adolescents

3.   SERI recognises that secondary students are in a unique developmental phase of their lives. Adolescence is a period of profound transformation and self-discovery; it is a time of identity formation, of asserting independence and of changing relationships for our secondary students. While schools cannot and should not replace the very important role parents play in the social-emotional development of their children, secondary schools also play a key role in helping students negotiate the challenges of adolescence and manage their own growth.

4.   Secondary schools should therefore guide students more closely in their holistic development, equip them with the proper tools to make the right choices, present them with opportunities to establish themselves, and aim to maximise their potential, in order to develop in each student the motivation to do his or her best. These must be undergirded by the provision of greater social-emotional support, and the strengthening of the teacher-student relationship.

Preparing Students for Learning and Life

Strengthening the Teacher-Student Relationship

5.   The teacher-student relationship (TSR) is fundamental to students' well-being and forms the basis for effective teaching and learning, and for supporting students' growth. A strong TSR has a positive impact on both academic and non-academic outcomes. To strengthen TSR, SERI notes that some schools have instituted weekly Form Teacher Periods for Form Teachers to build rapport and relationships with their students. SERI also recognises that some secondary schools invest in strong orientation programmes for new Secondary 1 students so as to induct these students into the new environment well and to form good TSR from the start. These are highly commendable ground-up initiatives to establish strong TSR, and which could be scaled to all schools. To further strengthen TSR, schools could also deploy the same Form and/or Co-Form Teacher to a class for at least two

consecutive years to provide stability and a constant adult figure. Effective orientation programmes and strong TSR will help students better manage the transition from primary to secondary school life, where they will experience significant changes, including a different physical environment, the need to foster new friendships and a significant increase in the number of subjects that they have to manage.

6.   SERI recognises that teacher capacity is crucial – teachers need to be equipped with the necessary knowledge and skills, and strengthen their social-emotional competencies in order to perform their pastoral role effectively. SERI recommends that the Academy of Singapore Teachers consider developing milestone training and professional development programmes for teachers to enhance their competencies in pastoral work.

7.   To provide leadership in the pastoral work of teachers, SERI recommends the introduction of Year Heads as Key Personnel appointments. SERI also proposes to proliferate the concept of "school-within-school" where we form smaller communities within each school in order to facilitate the development of stronger relationships between teachers and students.

Providing Greater Social-Emotional Support and Career Guidance

8.   SERI believes that stronger education and career guidance (ECG) can help students set high but realistic goals, which can act as powerful motivators. SERI recommends enhancing the current ECG portal as an interactive platform to inform students of the options and pathways available to them, by providing a baseline of authoritative, consistent and up-to-date information. In doing so, it will help students develop their milestone goals. SERI also commends schools which utilise profiling tools meaningfully to help students better understand their interests and strengths, and themselves. This will guide students in making sound educational, career and life choices.

9.   In addition, to help students appreciate their roles in the world, SERI recommends that schools send more students on overseas learning journeys, particularly in our region, which would help them better understand what it means to be a Singaporean in the global context. We can also explore outdoor education in schools as useful opportunities for students to learn about themselves and about relating to others.

10.   To support the affective environment, SERI recommends establishing Student Centres in secondary schools, if resources are available. Such centres will serve as venues for students to gather and to build stronger bonds with friends and teachers in a safe school environment.

11.   SERI also recognises the need to strengthen the nexus between secondary education and post-secondary education, given the increasingly variegated tertiary education landscape which also responds to changing industry needs. Hence, SERI recommends that a platform be established to facilitate regular dialogue between the secondary school principals and the post-secondary educational institutions, particularly the polytechnics and ITE. This will tighten the feedback loop between our mainstream school system and the post-secondary education system, and facilitate greater understanding as well as strengthen the educational delivery in each of these sectors.

Nurturing Character, Citizenship and Values

Implementing Character and Citizenship Education

12.   Character and Citizenship Education (CCE) has always been at the heart of Singapore's education system. Various key programmes have been put in place to inculcate values, competencies and skills in our students to develop them into good individuals and useful citizens. SERI strongly supports the important work done by the CCE Taskforce on enhancing the delivery of CCE in secondary schools.

Enhancing Student Learning through Co-Curricular Activities

13.   Co-curricular activities (CCA) provide authentic platforms for students to develop skills, acquire knowledge, and practise the values and soft skills taught in schools. A meaningful CCA experience contributes to the quality of school experience for students. Through the experiences provided by CCA, students discover for themselves their interests and strengths, which we hope will translate into their lifelong pursuits. CCA also foster social integration and develop in students a sense of belonging and camaraderie. Students with enriching CCA experiences will emerge from schools strong in character, grounded in sound moral values, equipped with competencies, and ready for the challenges in their adult life.

14.   As such, SERI recommends leveraging on CCA to further enhance student learning by (a) increasing student participation in sports and games through inter-school (recreational) sports competitions; (b) enhancing opportunities for student development by introducing optional CCA units, and incorporating service learning and community involvement programme into CCA; (c) maximising student engagement and learning in Uniformed Groups through policy review and programme enhancement; and (d) reviewing the Sustained Achievement Awards to better reflect the emphasis on process and outcome in CCA.

Strengthening Ability-driven Education

15.   Our current secondary education system is robust and of high standards because of constant reviews and improvements. SERI has reviewed both upper and lower secondary education, across the different courses. We affirm the increased support given to autonomous schools to strengthen the top band schools in our secondary school landscape. For the broad middle band of students, most of whom will be progressing to a polytechnic education, SERI also affirms the value of the many initiatives developed in the last few years to give Express and Normal (Academic) [N(A)] students a more varied exposure in the curriculum. These include the 'O' level School Initiated Electives (OSIEs), Applied Subjects and Advanced Elective Modules (AEMs). We also support the various efforts in strengthening the programmes for Normal (Technical) [N(T)] students, including the offering of Elective Modules (EMs) and the customised programmes of the N(T) Mark II schools.

Providing Greater Support to Strengthen Language and Mathematical Skills

16.   SERI is of the view that we should continue to strengthen core skills in language and mathematics, as they are fundamental skills that our students need for post-secondary education and the workplace. As such, SERI recommends that MOE continue to explore the provision of greater support to assist secondary schools in English Language (EL) and Mathematics teaching and learning.

17.   To better support teachers in delivering the intended outcomes of the EL and Mathematics syllabuses, SERI recommends that MOE facilitate the production of better instructional materials with commercial publishers for the teaching of EL and Mathematics. Such resources could include teachers' guides, manipulatives and digital resources.

18.   In addition, to support the teaching of different ability groups and to facilitate differentiated instruction, SERI supports the provision of allied educators (AEDs) to schools since 2004. In particular, these AEDs could be strategically deployed in N(T) and N(A) EL and Mathematics classes so that these classes could be optimally managed and supported for teaching and learning of these two subjects.

Implementing the "Step Curriculum" for N(T) Students

19.   SERI supports the recommendation by the Curriculum 2015 N(T) Curriculum Committee to implement the "Step Curriculum" for N(T) students. In this curriculum, the first step at both the lower and upper secondary levels focuses on enhancing personal and social learning of these students where issues of self-worth, self-motivation, purpose and career aspirations are addressed. The second step emphasises building foundational literacy and numeracy, so that students are more strongly prepared for more applied and pre-vocational learning at upper secondary.

Strengthening Articulation to Post-Secondary Education

20.   To strengthen the articulation of students to post-secondary education, MOE revised the Secondary 4N(A) promotion criteria to improve the alignment with polytechnic and ITE entry requirements. SERI is of the view that there is room to further adjust the Secondary 4N(A) promotion criteria. However, as the first batch of Secondary 5 students under the revised promotion criteria only sat for the 'O' levels in 2010, SERI recommends reviewing a few batches of students' results and progression to post-secondary education, before considering any further adjustment of the promotion criteria.

21.   In addition, as EL and Mathematics are foundational subjects which prepare students for progression to upper secondary and post-secondary education, SERI recommends reviewing the lateral transfer criteria to give due emphasis on these two subjects.

22.   SERI recommends expanding the subject options at 'O' and 'N' levels:

a. Applied Subjects, developed by the polytechnics in partnership with secondary schools, enhance our curricular offerings and provide more opportunities for students to pursue their interests in applied areas. SERI supports the polytechnics' efforts in developing Applied Subjects which have relevance to the students' post-secondary education.

b. MOE can study the feasibility of introducing more AEMs as well as EMs, which would provide secondary students with greater exposure to applied learning.

c. Schools can consider offering OSIEs, where resources allow and the programmes are sustainable. OSIEs enable secondary schools to develop and build upon their existing niche areas to cater to students who have the interest and aptitude in specific fields of study, such as Computer Science, PE and Drama.

Creating Multiple Pathways for Success

Expanding the Integrated Programme Landscape

23.   The Integrated Programme (IP) is an alternative model of delivering upper secondary and junior college (JC) education. While the 'O' levels serve as a valuable intermediate benchmark for the majority of our students, they may not be necessary for students who are clearly university-bound and can benefit from a less structured approach. Since 2004, 11 IP schools have been established, benefiting academically able students. As there remains a number of academically able students who could benefit from an IP education, SERI recommends the expansion of the IP to seven more schools. These seven schools will offer an IP-cum-'O' level dual track, which will allow for greater porosity between the two tracks. It will also reduce the emphasis on the PSLE, and provide encouragement to late bloomers who can cross over to the IP between Secondary 1 and Secondary 3. This is in line with SERI's view that secondary schools should help students manage the transition from primary to secondary school, offer flexibility and choice, and be customised to help students discover themselves.

Introducing Through-Train Programmes for N(A) Students

24.   To better prepare N(A) students who are able to benefit from a polytechnic education, SERI recommends the introduction of through-train programmes to polytechnic for N(A) students, who would not be required to sit for the 'O' levels, through:

a. Expansion of the ITE Direct Entry Scheme (DES) to allow Secondary 4N(A) students to study Higher Nitec courses and be assured of a place in a related polytechnic course, if they meet the qualifying GPA criteria; and

b. Introduction of a polytechnic Foundation Programme for top Secondary 4N(A) students to undertake pre-diploma training in the polytechnics, in lieu of preparing for the 'O' levels. The Foundation Programme would offer a practice-oriented curriculum taught by polytechnic faculty using applied pedagogies.

Establishing Specialised Schools for N(T) Students

25.   Over the years, MOE has made several enhancements to the N(T) course. These include revisions to the N(T) curriculum to focus more on practice-oriented learning; the introduction of EMs to develop students' interests and strengths in various areas; and the designation of three schools as N(T) Mark II schools offering new specialised subjects developed in partnership with ITE. These enhancements have resulted in improved student learning and engagement. Building on these enhancements and drawing from lessons learnt from our experience with NorthLight School and Assumption Pathway School, SERI recommends the establishment of specialised secondary schools that provide a variety of qualifications and skills certifications as an additional pathway for N(T) students.

26.   At the same time, SERI recommends studying how we could scale up the successes of the three N(T) Mark II schools across the system. These three pilot schools have implemented many curricular innovations in enhancing the teaching and learning of N(T) students, and in engaging them more effectively.

Leveraging on ICT to Support Learning

27.   The potential of Information and Communications Technology (ICT) to support learning has grown tremendously in recent years. New ICT devices that combine computing and connectivity, such as the iPhone, have become available to the mass market, and are increasingly affordable and prevalent. As more students own and use personal smart mobile devices, which give them access to wireless networks anytime and anywhere, the way they learn and interact with their teachers and peers is being transformed. With the growing trend of students engaging in collaborative online environments such as social networks, it is also likely that these environments will become a preferred mode of learning and interaction.

28.   SERI believes that ICT is an enabler that can be harnessed to support SERI's recommendations in and outside of the classroom, in both the academic and the affective domains. As such, SERI supports studying the need for one-to-one access or ownership of computing devices to support pervasive ICT use in teaching and learning.

Providing More Resources to Support Our Secondary Schools

29.   To enhance secondary education, we need to ensure that our schools continue to be adequately resourced, while we exercise financial prudence and discipline. To enhance the manpower resources for schools, MOE will provide a typical secondary school with three more teacher posts from 2011. Over and above these additional posts, schools will also be provided with more teachers in tandem with the roll-out of new initiatives and programmes, such as PE teachers to support the increase in PE curriculum time. Beyond the standard provisions, MOE will continue to support secondary schools with the 12 adjunct teacher posts already provided for. To provide a stronger middle management team, we will also be increasing the number of Key Personnel posts for a typical secondary school by about six. With the various additional manpower resources, the Pupil-Teacher Ratio in secondary schools is expected to improve from 16:1 in 2009 to 13:1 by end 2015, while the Pupil-Educator Ratio is projected to improve from 15:1 in 2009 to 12:1 by end 2015.

30.   Apart from the provision of additional manpower, the physical learning environment is also a key factor in teaching and learning. Over the medium term, MOE will continue to make enhancements to the infrastructure of secondary schools to support the key thrusts of SERI's recommendations, as well as to enhance the working environment of the teachers and staff of the schools.

Conclusion

31.   SERI's recommendations (summarised at Table 1) can only come into fruition with the support of our stakeholders, including parents. In implementing SERI's recommendations, MOE and schools will continue to engage our stakeholders, so that they understand the refinements that we are making to secondary education. With the implementation of the various recommendations, SERI believes that our secondary education will better prepare students for learning, and for life.

Table 1: Summary of SERI's Key Recommendations

Preparing Students for Learning and Life; Nurturing Character, Citizenship and Values		Strengthening Ability-Based Education; Creating Multiple Pathways for Success	
Prepare Students for Learning and Life	Enhance Character, Citizenship and Values Development	Strengthen Skills and Knowledge Acquisition	Create More Pathways for Success
(A) Strengthen the Teacher-Student Relationship Encourage good school practices, e.g. weekly Form Teacher periods, constant Form and/or Co-Form Teacher for two consecutive years, comprehensive orientation programmes Enhance social-emotional and pastoral competencies of teachers Appoint Year Heads Practise school-within-school concept (B) Provide Greater Social-Emotional Support and Career Guidance Enhance the ECG portal Promote overseas learning journeys and outdoor education Establish Student Centres Strengthen nexus between mainstream schools and post-secondary educational institutions	(A) Implement Character and Citizenship Education (B) Enhance Student Learning through Co-Curricular Activities (CCA) Increase student participation in sports and games through inter-school (recreational) sports competitions Introduce optional CCA units, and incorporate service learning and CIP into CCA Maximise student engagement and learning in Uniformed Groups through policy review and programme enhancement Review criteria for CCA Sustained Achievement Awards to better reflect emphasis on process and outcome	(A) Provide Greater Support to Strengthen Language and Mathematical Skills Facilitate the production of better instructional materials to support EL and Mathematics teachers Consider having dedicated allied educators to support EL and Mathematics teachers (B) Implement the "Step Curriculum" for N(T) Students (C) Strengthen Articulation to Post-Secondary Education Review further adjustment of Secondary 4N(A) promotion criteria Review lateral transfer criteria Study expansion of subject options at upper secondary, e.g. Applied Subjects, AEMs, EMs, OSIEs	(A) Expand the Integrated Programme (IP) Landscape (B) Introduce Through-Train Programmes for N(A) Students Expand ITE Direct Entry Scheme Introduce polytechnic Foundation Programme (C) Establish Specialised Schools for N(T) Students as An Alternative Pathway
Use of ICT as enabler for learning: Study the pervasive and effective use of ICT for secondary education Enhance secondary school infrastructure to better support teaching and learning, and to provide a better staff working environment			

CHAPTER I
Introduction

Chapter 1
Introduction

1.   In the light of the recommendations made by the Primary Education Review and Implementation (PERI) committee to enhance primary education, the Secondary Education and Review Implementation (SERI) committee was formed and tasked to review how our secondary education could be improved. See Annex A for the composition of SERI.

Approach

2.   We have a strong education system. Our primary schools provide a firm foundation for a sound education through an emphasis on knowledge acquisition, development of thinking and process skills, and inculcation of values. At the secondary level, we provide a broad-based education that builds on the foundation laid in primary schools, to give our students a range of experiences and the opportunities to develop the skills and values they need for life. Secondary schools should also prepare students for various pathways and specialisations at the post-secondary level. SERI believes that it is important for secondary education to continue to be broad-based and to build strong foundations. Our review aims to build on our current strengths and develop a stronger secondary school system that will deliver enhanced educational objectives amidst the changing environment we operate in and better prepare our secondary students for the future.

Key Driving Forces

3.   A scan of our local context and the education systems in other countries, such as those of Australia, China, Germany, Japan, the Nordic countries, UK, US and the International Baccalaureate (IB) Middle Years Programme, was conducted to understand the major external forces shaping the education landscape, particularly at the secondary level. Some of the key driving forces identified are:

   a. *Changing demographics*

       A growing non-resident population, falling fertility rates and increasing lifespan are changing Singapore's demographics in a significant manner. These changes have an impact on the skills and mindsets required in our students as our society becomes increasingly cosmopolitan.

   b. *The global economy and global challenges*

       Globalisation presents both opportunities and challenges. The traits and skills most valued to survive and flourish in a global environment are flexibility, creativity, innovativeness and networking abilities. As income disparities threaten to widen, education will continue to serve as a crucial social leveller. Our education system will need to build the necessary skills in our students, while continuing to inculcate in them a strong sense of social responsibility and service to the community and nation.

c. *The changing world of work and jobs*

Singapore's industry structure is shifting towards a knowledge-intensive one, with greater job mobility and rapidly changing job skills. These shifts emphasise the importance of continual learning and raise questions about how schools could facilitate the learning of "softer" skills required in the workplace, as well as the type of learning to be offered (i.e. skills for learning rather than specific knowledge).

d. *ICT – the next generation*

The younger generation in Singapore today is technology-literate, used to a culture of user-generated content and savvy in navigating today's information-rich world. It is important that we recognise the role of ICT and tap on ICT as a key enabler in both the formal and informal curriculum.

e. *Social connections and values*

With changing family structures and evolving values, we would need to examine the balance of responsibilities between the school and the home, as well as the role of teachers in guiding our youth to live in an increasingly complex socio-economic environment.

Lessons From Other Education Systems

4.   SERI undertook a comparative study of other education systems to gain new insights into the key features and principles behind secondary education in other countries. The following observations were derived from the external scan:

a. *Continuous learning aligned with the developmental stages of the child*

Most systems recognised the importance of the transitory secondary school years and that learning needs and education outcomes had a strong link with the developmental phase of the student.

b. *Prescribed national curriculum with flexibility at the school level and interest-driven learning*

We found broad alignment with most other education systems which had a nationally prescribed curriculum, with a wide coverage of subjects at the secondary level. The typical curricular diet comprised core or compulsory subjects, optional subjects and electives. At the higher years of secondary learning, the trend was to focus on providing appropriate pathways for post-secondary education, with greater specialisation (Scotland, Hong Kong, Denmark).

c. *Differentiated learning within curriculum*

Apart from electives, some countries also adopted finer customisation of their curriculum. Notable systems surveyed were Sweden's "Ladder Curriculum" and Germany's slate of institutions, stratified according to ability.

d. *Integrated, experiential and authentic learning*

This was a common trend observed in many overseas education systems, especially those that had recently undergone or were attempting reform (Japan, Hong Kong, US). There was increasing emphasis accorded to conducting inter-disciplinary studies, performing analysis across various subjects, and introducing a more holistic curriculum, including making use of outdoor learning.

e. *Embedded career guidance*

Many systems emphasised career guidance as an important part of the curriculum; in some, it was even considered compulsory, so as to assist students in discovering their interests and abilities, and to guide them on future career options.

f. *National assessment at the end of secondary education*

While the range and methods of assessment varied prior to the final year, most systems recognised the importance of national examinations at the end of secondary education to determine placement and ability for tertiary learning.

g. *Intervention programmes and strategies for the less academically inclined*

Many systems recognised the need to help less academically inclined students achieve in schools and had introduced various measures, ranging from offering applied learning courses, intervention or vocational training programmes, to siting students in unique learning environments that better meet their needs, such as the US's Knowledge is Power Program schools and career academies.

Engaging Our Stakeholders

5.   SERI also obtained input from our stakeholders. In all, seven focus group discussions were conducted with students from various secondary schools, junior colleges, the Institute of Technical Education (ITE) and polytechnics, and with secondary school principals. In addition, SERI engaged in dialogues with the polytechnics to look at how secondary education could be enhanced for the broad middle band of students who would articulate into the polytechnics. These sessions helped SERI validate our guiding principles for secondary education and the specific recommendations on both academic and non-academic fronts.

SERI's Guiding Principles

Chapter 2
SERI's Guiding Principles

1.   The overarching theme framing SERI's work is the recognition of the unique developmental phase of our students in secondary school. A period of profound transformation and self-discovery for students, adolescence is a time of identity formation, of asserting independence and of changing relationships.

2.   SERI recognises that schools cannot and should not replace the very important role parents play in the social-emotional development of their children. Nevertheless, secondary schools play a key role, working in partnership with parents and the community, in helping our students negotiate the challenges of adolescence and manage their own growth. To do this effectively, schools should guide students closely in their holistic development by equipping them with the proper tools to make the right choices and presenting them with opportunities to discover and establish themselves. Schools should aim to maximise each child's potential, in order to develop in each child the motivation to do his or her best. As teachers are the frontline in the delivery of holistic education, strong teacher-student relationships will facilitate the school's ability to provide greater social-emotional support to students.

3.   The secondary curriculum should help students manage the transition from primary to secondary school, offer flexibility and choice, and be customised to help students discover themselves. At the same time, exposure to diverse experiences, especially via co-curricular activities (CCA), facilitates the self-discovery process and allows adolescents to develop their self-confidence and talents.

4.   Secondary schools also play an important role in helping teenagers set the stage for the future. Students can venture forth into the future with courage and optimism only when armed with the right attitude, disposition and skills. Future planning should thus form an integral part of an adolescent's educational experience. Secondary schools should help students form a positive outlook to achieving success in life.

5.   The above guiding principles are the foundation that shapes the key thrusts of SERI's work, and were formulated based on research findings on the social-emotional characteristics of adolescent development.

Developmental Characteristics of Adolescents

A period of transition, change and stress

6.   Adolescence is recognised as an especially important transition period during which a person experiences significant cognitive, moral, physiological, psychological and social developments. It is during this period that young people develop abstract thinking abilities, become more aware of their sexuality, develop a clearer sense of psychological identity, and increase their independence from parents. The wide-ranging and often intense changes can make adolescence a dynamic and potentially turbulent period in one's life.

A time of identity formation

7.   Identity formation is a crucial developmental task during this period. This search for a distinctive identity is a challenge that has implications on the self-esteem and well-being of the person. In the process of identity development, the growing child will often take reference from people in his or her environment and seek out role models from various sources, ranging from relatives to teachers to more distant "idols" (such as prominent public figures).

A time of asserting independence and changing relationships

8.   Studies show that adolescents strive to create a natural separation and establish a sense of independence from figures of authority during this period. This shift in relationship affects not only parent-child relationships, but also teacher-student relationships. This generally leads to adolescents showing less deference to their teachers compared with primary school pupils. On the other hand, early adolescence is also a stage at which the peer group becomes increasingly important and the greatest influence is exerted by their companions. Peer influence is hence a key factor in encouraging either positive or negative behaviour.

A season of vulnerability and experimentation

9.   Adolescents also have to cope with a period of active physical development arising from puberty. Along with this, issues such as weight, self-esteem and self-image rise to the fore. Together with their attempts to redefine relationships and challenge authority, adolescents confront psychological issues. Adolescents are also widely considered by psychologists to be prone to recklessness and risk-taking behaviour, which could lead them down the wrong paths.

A time for setting the stage for the future

10.   Adolescence is a period where individuals begin to contemplate their future and how best they should prepare for it. The education process serves as a key means of preparing adolescents and should be harnessed to its full benefit.

Implications for Education

11.   Given the characteristics of adolescent development, the following are the implications for designing educational programmes that cater to the needs of this segment of students.

Providing the necessary social-emotional support

12.   It is crucial to provide adequate support for teenagers so that they have sufficient social-emotional resources to overcome the challenges they face. School personnel who work with them need to understand their needs, develop strong relationships with them, and build their social-emotional competencies and resilience to inoculate them from succumbing to the "growing pains". They should be supported by a nurturing school environment, pastoral care programmes and a counselling referral system to provide the necessary guidance and support. In order to do this effectively, school personnel must be equipped with the necessary knowledge and skills.

Building identity through character development programmes

13.   Identity development occurs within a context, and one of the most suitable school contexts for developing positive identity is the character development programme. Through character building activities, such as CCA, outdoor education, self-awareness and team building programmes, students have the opportunity to explore both identity-related questions and developmental questions (such as "What can I contribute?", "How do others see me?" and "How can I improve or grow?"). Hence, it is important that secondary schools provide strong character development programmes, with a curriculum which clearly articulates character goals and a systematic way of building the necessary competencies and personal qualities across the years of a student's time with the school.

Harnessing peer influence strategically

14.   Peer influence should be harnessed strategically and creatively to produce positive outcomes in adolescent developments, such as through peer-led or peer-organised programmes. Peer mentoring is another way to leverage on peer influence for positive impact, and also allows for opportunities to build leadership qualities.

Opportunities for adolescents to establish themselves

15.   Many adolescents are full of energy, raring to assert their identity and to establish themselves on "new frontiers". It is thus important to provide the right platforms, pathways and recognition for achievements to channel these energies and allow our students to establish themselves in different niches. It would also be important to recognise more non-traditional or non-conventional definitions of success, especially those that are recognised among the adolescents themselves.

Placing emphasis on future planning

16.   Adolescence is often perceived as a preparatory phase for adulthood. Hence, future planning must form an integral part of an adolescent's educational experience. The academic curriculum could also be taught to students against a backdrop of future plans. The study of different subjects takes on greater meaning and the goals of learning extend beyond achieving high scores to that of achieving life and career goals.

Preparing Students for Learning and Life; Nurturing Character, Citizenship and Values

Chapter 3
Preparing Students for Learning and Life; Nurturing Character, Citizenship and Values

Preparing Students for Learning and Life

(A) Strengthening the Teacher-Student Relationship

1.   A child's development can be understood by analysing the system of relationships found in the child's environment.[1] Teachers, parents, siblings and peers are the immediate persons that a child comes into contact with, and the relationships formed between the child and these persons help him or her understand and relate to larger social systems (e.g. education system and mass media). Dissimilarity between the child-family and school systems can be expected due to the differing expectations of both systems on the child. For adolescents, further complexities arise as they broaden their social experiences via relationships with peers and adults outside their family. Coupled with their identity formation and need to assert independence, tension often results between adolescents and their parents. These can create risky situations for the child if unresolved.

2.   The teacher-student relationship (TSR) is therefore critical to students' development given the time they spend in school; it plays a supporting role to the primary parent-child relationship in providing the additional protection function against behavioural risks. Strengthening TSR would buttress the parent-child protective function if it is weak during the child's developmental years.

Our beliefs about TSR

3.   Schools cannot and should not replace the role of parents in the social-emotional development of students. Nonetheless, SERI believes that TSR is important for the following reasons.

TSR acts as protection against risky social behaviours

4.   Adolescents are shaped more by their peers than by their parents, and are likely to turn to their peers for direction. They will be in a vulnerable position if their peers are engaging in risky behaviours. The perception of care from their teachers has been found to be critical protection against risky social behaviours. A strong TSR forms a foundation on which adolescents learn appropriate social interactions and develop positive expectations about themselves and others. They feel a higher sense of self-worth when they perceive care from a significant adult. In general, the teacher can assume the role of a significant adult who provides guidance, support and direction for students. This is particularly critical in early adolescence when they negotiate a changing relationship with their parents, and in middle adolescence when conflicts with parents are likely to be at a peak.

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[1] *Bronfenbrenner's Ecological Systems Theory is a useful philosophical framework to understand the role of the teacher-student relationship in a child's development.*

Perceived teacher support reduces emotional distress

5.   Parents, and even teachers, have the tendency to minimise the seriousness of adolescents' depressive symptoms and interpret the symptoms as a passing phase. A strong TSR would help the teacher address the emotional needs of the students and identify students who are emotionally distressed. The perceived teacher support provides a safe place for students to speak up and seek help on issues that they may not want their parents to know. It gives students the assurance and confidence that they will be heard by the teacher.

TSR has a strong positive effect on academic outcomes

6.   Teachers have an immediate influence on students' academic-related interests; the link between a student's academic outcomes and teacher support is strong and direct. This is in contrast with relationships with parents and peer support, which improves academic outcomes indirectly through emotional well-being. In the long run, a strong TSR leads to improvements in the prospects of graduation and higher education. The positive effects of TSR continue to persist even after students leave the favourable school environment and proceed to higher education.

Principles for TSR

7.   Therefore, it is imperative as we look at improving secondary education to examine how we can enhance TSR, while continuing to work hand-in-hand with parents and the community. SERI delineated the following principles as we considered our work in TSR.

Start early

8.   The perceptions that students have of TSR have strong effects on them even after they have left the school. Therefore, if students experience poor TSR early in their educational careers, it may be difficult to reverse its negative effects. The positive outcomes of TSR may also have a long gestation period before manifesting. These factors point to the fact that schools should attempt to develop strong TSR at the earliest possible stage of education. For the early adolescents searching for adults to confide in, teachers can potentially be their confidants in the new secondary school environment.

Stability of relationship

9.   Stability in a child's environment is critical to the child's development. This is especially so in transitional periods, such as between the middle years and early adolescence. Similarly, the effects of TSR can be amplified if there is stability in the relationship. Within the school, it is important that quality TSR be maintained as the student progresses through the levels. Thus, it is imperative that teachers teach a cohort of students over a sustained period. At the systemic level, an emphasis on TSR in all schools will ensure that the child remains in a positive TSR environment even as he or she progresses through his or her educational career.

Teachers should have strong social-emotional competencies

10.   The personalities of individuals who are significant to the students are crucial to the child's development and the strength of the protective function of TSR. To play this role well, teachers have to strengthen their own social-emotional competencies. Competent teachers are able to recognise the emotional needs of students and provide the necessary support. This is the fundamental building block of strong relationships. Teachers also serve as role models for the desired social-emotional characteristics in students. Therefore, it is important to provide teachers with the necessary training in social-emotional competencies, besides skills to facilitate social-emotional learning of their students.

Ensure flexibility

11.   Rewarding relationships cannot be established simply between any two persons. Similarly, TSR can only succeed if there is strong rapport between the student and the teacher. If the relationship is characterised by poor rapport, or even perceived enmity, it will be detrimental to the child's development. Thus, schools must ensure a degree of flexibility when promoting TSR and do not trap any individual student in an uncomfortable TSR. Possible actions to this end could be to allow students with serious issues with the teacher to change classes or to have additional mentoring teachers outside the usual class teachers.

Proposed strategies to strengthen TSR

12.   The size and make-up of secondary schools in Singapore can influence TSR. While our larger secondary schools have the advantage of a more varied curricular and co-curricular programme, secondary students' experience of school and of teachers is potentially more distant and fragmented, unlike primary pupils who would have closer relationships with a smaller group of teachers. It is thus important to strengthen the form class as the natural organising unit for building quality TSR in secondary schools.

13.   In line with the implementation of PERI, five strategies were formulated at the primary level to create stability and continuity, and strengthen teacher-pupil relationships. There will be more focus on the mentor teacher concept so that more attention will be given to individual pupils throughout primary school life. In the transition from primary to secondary education, these strategies are equally relevant. ***SERI recommends adopting these strategies to continue the attention on individual students and to strengthen TSR in secondary school (see Table 3-1).*** In fact, SERI notes that many schools are already putting them into practice, and commends them for these ground-up initiatives which could be scaled to all schools.

Table 3-1: Strategies to Ensure More Attention for Individual Student Development throughout Secondary School Life

S/N	Strategies	Specific Objectives
1	Weekly Single Period for Teacher-Student Interaction	To create more time and space for teacher-student interaction
2	One-to-One Teacher-Student Interaction Time with each student having access to Form or Co-Form Teacher at least once a term	To ensure personalised attention on individual students
3	Deployment of constant Form and/or Co-Form Teacher for at least two consecutive years	To provide a constant adult figure
4	Training of Form Teacher and Co-Form Teacher	To build social-emotional competencies and knowledge in the pastoral care area
5	Appointment of Year Heads	To provide leadership to the pastoral work of Form Teachers

Box 3-1: Examples of Good TSR Practices in School

One of the core programmes of Dunman Secondary School is the weekly whole-school journal reflection. One period is set aside every week where all Dunmanites are asked to reflect on issues ranging from personal issues and current affairs to suggestions for school improvement. This allows the teacher to have a better feel of the class climate and the difficulties each student faces in school or at home, and strengthens the interaction between the Form Teacher and the students.

Lester Yeo is a Dunmanite who credits his development to the two "Mr Sims" in the school. When he first entered Dunman Secondary School in 2009, Lester was in the N(T) course. Through the guidance, encouragement and tutelage of Mr Ivan Sim, his Form Teacher, Lester grew in confidence and did well enough at the end of Secondary 1 to join the N(A) course where he currently is. As his Form Teacher, Mr Ivan Sim also recognised Lester's leadership potential and recommended him to join the Student Council. Lester also turns to Mr Gabriel Sim, currently the teacher-in-charge of the Student Council, for guidance especially on leadership matters. Through the Student Council,

Mr Gabriel Sim has inspired Lester to grow his leadership ability.

In CHIJ St Joseph's Convent, level camps during the first week of the school year allow teachers and students to get to know one another in a less formal and fun environment, such as during camp fire, learning journeys and field trips.

During one of these level camps, Miss Michel Chua observed a new girl who joined her form class. The girl had a wonderful personality but appeared withdrawn as she did not know her classmates yet. Miss Chua could see that she wanted to try the high element course, but was held back as her friends were not willing to go on the element. Urging the girl to try, Miss Chua promised that she would cheer for her. When the student was on the element, her classmates unexpectedly also cheered for her. Through this incident, the class forged a bond with the student, which helped her develop a sense of belonging to the class. This little gesture made such an impact on the girl that on Teacher's Day, she wrote a note thanking Miss Chua for the encouragement and for cheering the loudest.

Interaction

14.   Strategy 1: Quality relationships are fostered through social interaction. For the building of TSR in secondary schools, it is important that there are ample and deliberate opportunities for constant teacher-student interaction. The strategy of using the Form Teacher as a key focus to building TSR is likely to be the most effective. A weekly single period will serve as a useful structure for teacher-student interaction within the formal curriculum time. This would provide a non-threatening time for Form Teachers to build rapport and relationships with their students.

15.   Strategy 2: The strategy of one-to-one teacher-student interaction builds upon the first strategy, through personalised attention by the Form or Co-Form Teacher on individual students in the class. This enables the Form Teacher to engage every student, get to know each student as an individual, identify students' needs, and nurture character traits, dispositions and attitudes. Such one-to-one teacher-student interaction can be formally scheduled within each term by the Form or Co-Form Teacher, or it can be by way of informal but deliberate interaction with individual students during school or class activities or along common spaces during school hours.

16.   In the transition from primary to secondary school, the relationship-building between the Form and Co-Form Teachers and students in the class must start early and strongly in the new secondary school environment. It is thus important for schools to invest in comprehensive orientation programmes for new Secondary 1 students. This will give students and Form Teachers ample and deliberate opportunities to be introduced to one another and interact meaningfully, and will set a strong foundation for rapport and positive TSR as students and Form Teachers progress through the year together. Similarly, in the transition from lower to upper secondary, schools should invest time at the start of the year for Secondary 3 students in their new classes to be introduced to their new Form and Co-Form Teachers and get to know one another better.

Stability

17.   Strategy 3: The strategy of deploying a constant Form and/or Co-Form Teacher for at least two consecutive years, with form classes kept intact, aims to provide a constant adult figure, which will be the linchpin of stability and continuity in the student's relationship with teachers. This strategy is particularly important, considering the banding of students by subject abilities and Mother Tongue Languages during curriculum time and different subject combinations taken by upper secondary students, which means that students within a class could be taught by a large number of different teachers as they progress through the levels.

Capacity

18.   Strategy 4: Teacher capacity is crucial and training aims to equip Form and Co-Form Teachers with the necessary knowledge and to strengthen their social-emotional competencies for them to perform their pastoral role more effectively. Form Teachers need to be knowledgeable about the social and emotional well-being of their charges, especially at their adolescent developmental phase. Strong social-emotional competencies will enable teachers to recognise students' needs and provide the necessary support for building strong relationships.

19.   The Academy of Singapore Teachers was established to build a teacher-led culture of professional excellence centred on the holistic development of the child. SERI recommends that the Academy develop milestone training and professional development programmes for teachers, led by teachers and supported by MOE, to enhance the pastoral competencies of teachers. At the same time, professional networks can be formed within the Academy to foster a collaborative culture for teachers' growth.

Support

20.   Strategy 5: Year Heads could be appointed to support and provide leadership to Form Teachers in their pastoral work. They could ensure a more coherent delivery of pastoral care across the classes through designing programmes and overseeing pastoral care and development of students in the level. The Year Head would also take on a direct pastoral relationship with students in the level, as the additional mentoring teacher outside the usual class teachers, thus ensuring flexibility when promoting TSR.

21.   One of the key activities for the Year Head to oversee is the orientation programme to induct new Secondary 1 students. The Year Head will have to structure a myriad of activities for the Form Teachers and students to get to know one another, as well as develop students' social-emotional capacities. Similarly, the Year Head should lead the organisation of the induction programme for Secondary 3 students and their new Form Teachers for them to get to know one another better.

22.   MOE has reviewed the Key Personnel quota for schools, and a typical school will be provided with about six additional Key Personnel. It is proposed that Year Heads be appointed within a school's quota of Key Personnel, in recognition of the leadership role that they play in supporting Form Teachers in their pastoral work. The Year Heads will work closely with the various Heads of Department, especially for the Normal course(s), as the students in the different courses have different needs.

23.   ***SERI proposes that schools practise the "school-within-school" concept to build on the structures of the Year Head and Head of Normal course(s) to support quality TSR.*** A smaller school concept encourages a familial feeling; it is easier for students and teachers to know one another better and this facilitates the building of strong relationships. As it may be difficult to achieve small school sizes, a practical alternative is to encourage the school-within-school concept. A school could be segregated by cohorts, with each cohort having a fixed set of teachers who teach the cohort of students over a sustained period, so that stronger relationships can be fostered over longer periods of interaction.

24.   Such a cohort can also be defined by level and/or by curriculum. For instance, in the horizontal level plan for implementing a school-within-school, a fixed set of teachers, led by a Year Head, will follow through with their students in a specific level across the courses from entry, though lower and upper secondary, to graduation. Another way to implement a school-within-school is the specialised curriculum plan. Students taking a specific curriculum, e.g. the Normal course, will be taught by a fixed set of teachers, led by a Head who can look into the social-emotional and academic needs specific to the characteristics of the students as they progress. A third possible variation of a school-within-school concept is by dividing the school into "houses".

25.   In addition, support should be provided to Form Teachers, who have greater interaction with students on a regular basis, to ensure the development of a locus of care in the classroom and the building of quality TSR. Where feasible, some off-loading for Form Teachers of challenging classes and formalising Co-Form Teachers would support Form Teachers in the continued and sustained monitoring of students' social-emotional needs and growth.

(B) Providing Greater Social-Emotional Support and Career Guidance

26.   To help students better understand themselves, their interests and their strengths, schools could use profiling tools such as the Myers-Briggs Type Indicator test.[2] MOE could support the implementation of such tools, and train staff (e.g. Full-Time School Counsellors, allied educators and Form/Co-Form teachers) to administer these tools, interpret their results and help students draw up suitable action plans to further develop themselves. The profiling tools built into MOE's Education and Career Guidance (ECG) portal could be more widely used.

27.   In 2008, MOE established the Internationalisation Fund to enable secondary schools to send Singaporean students for an overseas immersion. To help students appreciate their roles in the world, *SERI recommends that MOE continue to encourage and support schools to send more Singaporean students on overseas learning journeys.* Given that Singapore is inextricably linked to Asia, learning journeys to regional countries would help students better understand being Singaporean in the context of Asia. Furthermore, learning journeys to regional countries are lower in cost than trips to the US and Europe, allowing schools to stretch the Internationalisation Fund further to benefit more students. We can also explore outdoor education in schools as useful opportunities for students to learn about themselves and about relating to others.

Box 3-2: Use of Student Profiling Tools

Ngee Ann Secondary School introduced a set of comprehensive level-based developmental profiling programmes for all its students. Each student will have an individualised profiling dossier developed over their 4 to 5 years in the school.

Level	Profiling Programme
Secondary 1	Learning Styles
Secondary 2	Dominance-Influence-Steadiness-Conscientiousness (DISC), with a focus on leadership
Secondary 3	Resilience
Secondary 4 and 5	Myers-Briggs Type Indicator (MBTI), with a focus on career

For example, students are profiled in terms of their learning styles at Secondary 1 and personality at Secondary 2 to help subject teachers and CCA teachers better understand the students' learning and emotional needs. With such understanding, teachers can design differentiated lessons to suit individual students' needs, as well as improve group dynamics within class teams and CCA.

The profiling information serves to enhance and improve TSR as teachers are trained to understand and harness the profiling data to understand students' needs and guide them for character development.

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[2] *As another example, the Kouzes-Posner's Leadership Challenge has a profiling tool that not only helps students discover their leadership styles, but also teaches them on how they can lead without a formal position, how leadership behaviour can improve with guidance and coaching, and how leadership is about relationships, e.g. between peers and between teachers and students.*

28.   ***To support the affective environment, SERI recommends enhancing the physical learning environment by establishing Student Centres in secondary schools.*** Such centres will serve as venues for students to gather and to build stronger bonds with their friends and teachers in a safe school environment. Activities can be organised to engage students in meaningful activities, foster positive interaction and develop student leadership. The Student Centres can also be an alternative location for students to study after school, or a place to avail themselves of counselling support, and can also serve as a one-stop service for loaning sports equipment and other games.

29.   While the above recommendations help students better understand and develop themselves, some students may need more motivation to improve themselves. In this respect, the value of ECG is immense. Proper ECG provides students with reachable goals which act as powerful motivators. It is important to provide students with a baseline of authoritative, consistent and up-to-date information to guide them in making sound educational, career and life choices.

30.   Good ECG not only presents information about the options available to students based on their current performance, but also advises students about choosing between pathways as well as the steps needed to work towards those pathways e.g. relevant subject combinations for students interested in Nursing as a career. ***SERI recommends enhancing the current ECG portal as an important interactive platform to help students develop their milestone goals, which will in turn energise students in their learning.*** This can include incorporating decision-making tools to facilitate students in making their educational choices.

31.   In addition, SERI recognises the need to strengthen the nexus between secondary education and post-secondary education, given the increasingly variegated tertiary education landscape which also responds to changing industry needs. Hence, ***SERI recommends that a platform be established to facilitate regular dialogue between the secondary school principals and the post-secondary educational institutions, particularly the polytechnics and ITE.*** This will tighten the feedback loop between our mainstream school system and the post-secondary education system, and facilitate greater understanding as well as strengthen implementation of MOE's policies amongst the stakeholders.

Enhancing Character, Citizenship & Values Development

(A) Implementing Character and Citizenship Education

32.   As articulated in the Curriculum 2015 review, we aim to nurture students who are confident persons, self-directed learners, concerned citizens and active contributors through Citizenship and Character Education (CCE). To facilitate this central focus as a key desired outcome, a dedicated CCE unit within MOE will be formed to coordinate and synergise efforts across various domains such as National Education, Social-Emotional Learning, Civics and Moral Education. At the school level, principals will continue to be the key leader in driving efforts in CCE. Within MOE HQ, a CCE Taskforce chaired by DGE will oversee these efforts. ***SERI agrees with the importance of CCE in our education, and strongly supports the critical work done by the CCE Taskforce.***

(B) Enhancing Student Learning through Co-Curricular Activities

33.   Co-curricular activities (CCA) are integral to the school experience. They provide authentic platforms for students to develop skills, acquire knowledge, and practise the values and soft skills taught in schools. Through the experiences provided by CCA, students discover for themselves their interests and strengths, which we hope will translate into their lifelong pursuits. CCA also foster social integration and help students develop a sense of belonging and camaraderie. Students with enriching CCA experiences will emerge from schools strong in character, grounded in sound moral values, equipped with competencies, and ready for the challenges in their adult life.

34.   A meaningful CCA experience contributes to the quality of school experience for students and SERI recommends leveraging on CCA to further enhance student learning, as described in the following paragraphs. Increase Student Participation in Sports and Games through Inter-School (Recreational) Sports Competitions

35.   The current CCA landscape in secondary schools is a vibrant one and every student is required to participate in at least one CCA. Beyond their chosen CCA, there is also a wide range of sporting activities in schools to encourage mass student participation in sports, e.g. the Physical Education (PE) programme[3], annual school cross-country run, sports carnival, intra-school sports events, and activities organised under the Sports Education Programme (SEP).[4]

36.   The annual national and zonal sports competitions allow selected students who are proficient in the sport to strive for excellence and compete for the title of being the nation's best. Intra-school sports competitions, e.g. inter-house and inter-class competitions, provide for mass sports participation and low-stake competition opportunities within the schools. Both categories are currently sufficiently provided for within the school system, albeit to varying degrees of scale and extent of participation. In between these categories, schools sometimes organise smaller scale, low-stake inter-school competitions (e.g. those involving a few schools), such as sports and swimming carnivals which are currently held more irregularly.

37.   As competitions help students develop resilience and build confidence and character, there is room to create more platforms, especially in the middle category, for students to practise their skills against similarly-skilled students in other schools. ***To provide opportunities for exposure and greater mass participation in sports competitions, it is proposed that schools organise more intra-school competitions and inter-school (recreational) sports competitions.***

38.   Increasing the number of intra-school and inter-school (recreational) sports competitions will provide more students with opportunities to compete in a non-threatening environment and to gain a better understanding of their abilities. These competition experiences will develop confidence and determination in students, as well as equip them with self-management skills. To broaden the sporting experience of students, in the medium term, schools should aim to provide every secondary student with at least two opportunities to participate in sports competitions at a level suitable for them, during their secondary school years.

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[3] *MOE will increase the PE curriculum time from one to two hours for secondary students, as part of our new framework for 21st Century Competencies and Student Outcomes, to strengthen the quality of PE education.*

[4] *SEP is an initiative by MOE and Singapore Sports Council to promote sports participation in schools. It aims to raise the level of participation in sports and to increase overall fitness levels in schools. SEP caters to all students, particularly those not in school teams but wish to participate in a sport.*

39.   *Target student groups.* The inter-school (recreational) sports competitions should cater to secondary students who are non school-team players and who do not have opportunities to participate in competitive sports:

   a.   Students who are currently in sports CCA but are not selected to represent the school (including students who are reserve players or non-school team sports CCA members); and

   b.   Students who are in non-sports CCA but are interested in sports (e.g. these students could have been exposed to the sports during PE lessons, but lack opportunities to compete).

40.   *Pilot of inter-school (recreational) sports competitions.* SERI recommends a pilot phase in early 2011 to gradually involve the community and iron out teething problems in the organisation of such sports competitions. MOE could partner a National Sports Association to pilot one game at the national level, while the Zonal Sports Development Committees could each pilot one competition for a sport. More popular sports such as badminton, basketball and football could be chosen.

Enhance Opportunities for Student Development by Introducing CCA Units, and Incorporating Service Learning and CIP into CCA

41.   CCA are an important platform for engaging students and they provide opportunities for holistic development. Hence, it is important to ensure healthy CCA participation rates. For students with low participation rates, we could enhance the CCA programmes to better meet the needs of these students.

42.   We are enhancing our education system to provide students with more opportunities for exploration. With the introduction of the Programme for Active Learning (PAL) for Primary 1 and 2 pupils, the future education landscape will be one in which students have extensive exposure through PAL, CCA and other enrichment activities by the time they enter secondary schools. In line with this, ***it is proposed that optional CCA units (designed to have increasing levels of depth) be offered in secondary schools, to encourage the exploration of interests and development of students' character through CCA.***[5]

43.   Students can experience "Unit 1" of various CCA[6] as a taster and those who wish to pursue their interest[7] in a particular CCA can explore higher level CCA units after school. These units complement core CCA which students will still participate in, as the latter are essential for depth and specialisation. The higher level CCA units are designed for further exploration rather than specialisation and thus, will still be pitched at a more introductory level compared with core CCA.

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[5] *The proposed CCA units differ in content from the enrichment activities recognised by LEAPS, where enrichment points are awarded for the completion of Character Development Programme modules in secondary school.*

[6] *A possible platform for CCA units is CCE, as they are intended for a student's non-academic development and contributes to his or her character education.*

[7] *There will be a group of students who would specialise and pursue their strengths and talents to their maximum potential, in view of the talent development schemes and talent grooming initiatives by MOE such as the Centres of Excellence, Direct Schools Admissions and the Junior and Youth Sports Academies. These students may choose not to participate in these exploratory CCA units.*

44.   Optional CCA units should ideally be run by teachers, but in cognisance of manpower and resource constraints, schools may deploy allied educators and adjunct teachers who are passionate about CCA to run these optional CCA units. Schools can also tap on schemes such as the SEP to fund optional CCA units. The SEP provides schools with a maximum of $10,000 per annum, to fund up to 50% of the cost of conducting sports programmes. As each school has its unique constraints, MOE can collect and share examples of how some schools have successfully implemented such optional CCA units.

Box 3-3: Modular CCA to Broaden Students' Experiences

In 2010, Jurong West Secondary School trialled the concept of "cross modular CCA" to broaden students' CCA experiences and to serve as a platform for student leadership.

In Term 1, selected members from the clubs and societies attended performing arts modules organised by the Dance troupe, the Choir and the Band. These students switched to sports and games modules in Term 4. Through such exposure to small units of CCA, these students gained insight into what other CCA were about. They enjoyed the activities and expressed their interest to also experience other CCA.

With the success of this trial programme, the school has plans to expand the programme, and implement a "Cross Modular CCA Week" across various CCA.

45.   Another platform to provide greater opportunities for student development is the Community Involvement Programme (CIP), which continues to be relevant in inculcating in students the value of active citizenship through serving and building bonds with the community. ***SERI proposes to incorporate CIP and service learning into CCA programmes.*** This will facilitate the translation of technical and soft skills acquired in CCA into tangible benefits for the community and students themselves. Incorporating CIP into CCA also introduces an element of continuity. Unlike class-organised CIP and short-term service-learning projects which typically end when students graduate, a CCA group can continue to serve their chosen community partner with each cohort of students.

Maximise Student Engagement and Learning in Uniformed Groups (UG) through Policy Review and Programme Enhancement

46.   The key factor in the delivery of a successful UG programme lies in the provision of an enriching learning experience. This experience is characterised by a variety of rich activities and programmes that cater to the development of character, as well as the social and emotional competencies of UG members. More importantly, the national education elements in UG foster racial integration and a sense of belonging in students which contributes to the larger cause of nation building.

47.   ***SERI is of the view that the rich potential of UG CCA can be better maximised and recommends reviewing the current UG policies***, taking into account students' interest and engagement, schools' ability in recruiting and sustaining UG membership and accountability in resource investment, while not compromising the objectives of UG CCA. At the same time, ***SERI recommends that the UG continue to enhance their programmes to ensure their relevance and to engage students in meaningful learning***, as relevant and interesting UG programmes will naturally attract, engage and retain students in the CCA. SERI notes that the UG have been embarking on several key initiatives to ensure that their programmes stay relevant. For instance,

   a. The National Cadet Corps (NCC) is embarking on a Transformation Masterplan to initiate a paradigm shift in the way NCC programmes are run. The Masterplan will see a greater variety of activities, such as sports and games and survival training, and greater partnership with MINDEF to provide more support for the NCC programmes.

   b. The National Police Cadet Corps (NPCC) is working on a nation-wide project to infuse IT elements into NPCC training. The final product will come in the form of IT resource packs that will enhance teacher officers' delivery of lessons.

   c. The National Civil Defence Cadet Corps (NCDCC) has introduced urban adventure challenges, with integrated elements of outdoor learning, heritage education and UG skills.

Review Criteria for CCA Sustained Achievement Awards to Better Reflect Emphasis on Process and Outcome

48.   Introduced in 1998, the Sustained Achievement Awards (SAA) in MOE's Masterplan of Awards are Level Two awards that recognise schools for excellence beyond academic success. Since their introduction, the SAA have recognised the sustainability of schools' results and their continuous improvement towards excellence in Aesthetics, Sports and UG. To increase student engagement and opportunities for students' exploration of interests, and to facilitate the explicit teaching of soft skills and values through CCA, ***SERI recommends studying the implementation of a process-based award structure to better reflect the emphasis on process and outcome***. This will also cater to the focus on mass participation programmes in the PE and Sports Development Framework unveiled in May 2010, and the objective of holistic education and focus on 21st Century Competencies.

Strengthening Ability-Driven Education; Creating Multiple Pathways for Success

Chapter 4
Strengthening Ability-Driven Education; Creating Multiple Pathways for Success

1.   Our current secondary education system is robust and of high standards because of constant reviews and improvements. Testimony to the high quality of the education system in Singapore, we have consistently performed well in international assessments.

2.   For instance, at the secondary level, Singapore has ranked within the top three positions for Mathematics and Science at Secondary 2 in the Trends in International Mathematics and Science Study (TIMSS) since 1995 when it was first conducted. The study affirms the high quality of Mathematics and Science education in Singapore and a school environment conducive to learning for our students.[8]

3.   In the Programme for International Student Assessment (PISA)[9] 2009, which Singapore participated in for the first time, our 15 year-old students (i.e. Secondary 3 or 4) did well and we were the top performing country among those who administered the assessment in English.[10] PISA assesses the abilities of students near the end of secondary education to apply knowledge and skills in Reading, Mathematics and Science and to analyse, reason and communicate effectively as they solve problems in a variety of real-life situations.

4.   SERI's curricular recommendations therefore aim to build on the strengths of our current system. We have reviewed both upper and lower secondary education, across the different courses, viz. Express, Normal (Academic) [N(A)] and Normal (Technical) [N(T)], and affirm the various initiatives implemented in recent years to strengthen secondary education.

5.   Prior to June 2009, autonomous schools received additional funding of about $150 per student per year, over and above the usual annual school operating budget. From June 2009, MOE increased the funding to $300 per student. In addition, autonomous schools will also receive additional funding from 2010 to explore new pedagogical approaches to improve teaching and learning, as well as to develop stronger programmes in the area of student leadership. SERI affirms the increased support given to autonomous schools to strengthen the top band schools in our secondary school landscape.

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[8] *The TIMSS 2007 survey of students, teachers and principals also affirmed that Singapore schools were well-equipped with Science laboratories and resources were readily available for Mathematics and Science instruction. In addition, our schools provided students with safe environments conducive to learning.*

[9] *PISA is a triennial study conducted under the auspices of the Organisation for Economic Cooperation and Development (OECD). The main subject domain assessed in PISA 2009 was Reading.*

[10] *Based on mean scores, Singapore was ranked fifth in Reading, second in Mathematics and fourth in Science. Our students performed better in Reading than those from English-speaking countries like Australia, UK and US.*

6.   For the broad middle band of students, most of whom will benefit from a polytechnic education, SERI also affirms the value of the many initiatives developed in the last few years to give Express and N(A) students a more varied exposure in the curriculum. These include the 'O' level School Initiated Electives (OSIEs), Applied Subjects and Advanced Elective Modules (AEMs). We also support the various efforts in strengthening the programmes for N(T) students, including the offering of Elective Modules (EMs) and the customised programmes of the three N(T) Mark II schools.[11]

7.   Building on the strengths of our current system, SERI proposes to strengthen skills and knowledge acquisition and to create more pathways for success for students of all courses, so that they would be better prepared for post-secondary education.

Strengthening Skills And Knowledge Acquisition

8.   An ability-driven education seeks to allow students with varying abilities to reach their potential. At the secondary level, we provide a broad-based education to give our students a range of experiences and the opportunities to develop the skills and values they need for life, while preparing them for specialisation at the post-secondary level. SERI believes that it is important for secondary education to continue to be broad-based; at the same time, we should continue to enhance and build on current programmes to better prepare our students beyond the secondary level and strengthen their articulation to post-secondary education.

(A) Greater Support to Strengthen Language and Mathematics Teaching

9.   SERI is of the view that we should continue to strengthen core skills in language and mathematics, as they are fundamental skills that our students need for post-secondary education and the workplace. As such, SERI recommends that MOE continue to explore the provision of greater support to assist secondary schools in English Language (EL) and Mathematics teaching.

Consider Having MOE Centrally-Developed Quality Instructional Materials

10.   Currently, secondary school textbooks are collaboratively published with commercial publishers. In order to better support teachers in delivering the intended outcomes of the EL and Mathematics syllabuses, **_SERI recommends that MOE facilitate the production of better instructional materials with commercial publishers for the teaching of EL and Mathematics._**[12] Such resources could include teachers' guides, manipulatives and digital resources. This will strengthen the alignment between the instructional materials and the intended curriculum, pedagogy and assessment of students.

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[11] *The three N(T) Mark II schools are Bedok Town Secondary, Shuqun Secondary and Si Ling Secondary.*

[12] *This would be particularly helpful for the N(T) course, which has a smaller student population, and thus commercial publishers generally see less value to invest in developing such materials.*

Provide Additional and Dedicated Allied Educators for EL and Mathematics

11.   It is important that teachers are able to spot when a student is not coping well and provide the immediate and necessary intervention in class especially for EL and Mathematics so that they do not lag behind. ***To support the teaching of different ability groups and to facilitate differentiated instruction, SERI supports the provision of allied educators (AEDs) to schools*** since 2004. Where appropriate, schools may consider dedicating AEDs to support teachers teaching the N(T) and N(A) students for EL and Mathematics, such as in classroom management and administrative duties. This would allow these teachers to better manage the teaching and learning processes, and better engage the students to ensure quality instruction.

(B) Implementing the "Step Curriculum" for N(T) Students

12.   The C2015 N(T) Curriculum Committee was set up to study how to better customise the curriculum for N(T) students. ***SERI supports the recommendation by the C2015 N(T) Curriculum Committee to implement the "Step Curriculum"***. The first step at both the lower and upper secondary levels will focus on enhancing personal and social learning where the issues of self-worth, self-motivation, purpose and career aspirations are addressed. The second step emphasises building foundational literacy and numeracy. Moving up, the higher steps will focus students on broad-based learning at lower secondary, and will see the offering of more applied type of learning at upper secondary. To build positive work habits and skills for the future, pre-vocational exposure and experience would be incorporated in relevant upper secondary subjects.

13.   SERI also recommends that where appropriate, a modular approach could be adopted in the design of the N(T) curriculum to ensure that the curriculum is made more accessible for students. Modular assessment could also be explored, with appropriate use of ICT, and authentic and experiential learning approaches.

(C) Strengthening Articulation to Post-Secondary Education

Further Adjust Secondary 4N(A) Promotion Criteria

14.   The Secondary 4N(A) promotion criteria were revised in 2007 to improve the success rates of Secondary 5 students in gaining admission to pre-university or polytechnics. Based on the old promotion criteria of EL ≤ 5 and Best 3 Subjects ≤ 10 at the 'N' levels, 78% of the Secondary 4N(A) cohort was promoted to Secondary 5. However, only about 60% of these Secondary 5 students progressed to pre-university or polytechnics, while the rest repeated Secondary 5, joined ITE or left the formal education system. The revised Secondary 4N(A) promotion criteria were set at EL ≤ 5, MA ≤ 5 and ELMAB3 ≤ 19. They were a refinement to improve the alignment of the promotion criteria with polytechnic and ITE entry requirements, as well as the importance of Mathematics.[13]

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[13] *The admission requirements to the polytechnics include five subjects in the computation of the aggregate score. EL and Mathematics are also required for most of the polytechnic courses.*

15.   *SERI is of the view that there is room to further adjust the Secondary 4N(A) promotion criteria by increasing the emphasis on EL and Mathematics, which are foundational subjects that prepare students for progression to post-secondary education*. Nevertheless, as the first batch of Secondary 5 students under the revised promotion criteria only sat for the 'O' levels in 2010, SERI recommends reviewing a few batches of students' results and progression to post-secondary education, before implementing any further adjustment of the Secondary 4N(A) promotion criteria.

Review Lateral Transfer Criteria to Strengthen Alignment with Articulation to Post-Secondary Education

16.   Currently, the criteria for lateral transfer from one course to another, e.g. Secondary 1N(A) to Secondary 2E, takes into account the average score of all the subjects taken by a student.[14] *As EL and Mathematics are foundational subjects with higher articulation value to upper secondary and post-secondary education, SERI recommends reviewing the lateral transfer criteria to give greater emphasis on these two subjects.*

Expand Subject Options at GCE 'O' and 'N' Levels

17.   Applied Subjects are currently being offered in various schools to enhance our curricular offerings and provide more opportunities for students to pursue their interests in applied areas. These Applied Subjects are developed by the polytechnics in partnership with secondary schools. There are currently five Applied Subjects, viz. Creative 3D Animation, Fundamentals of Electronics, Introduction to Enterprise Development, Media Studies (English) and Media Studies (Chinese). *SERI supports the polytechnics' efforts in offering Applied Subjects, which have relevance to the students' post-secondary education.*

18.   *SERI also recommends studying the feasibility of introducing more Advanced Elective Modules (AEMs) and Elective Modules (EMs)*, which would provide secondary students with greater exposure to applied learning. In particular, SERI recommends studying whether EMs could be extended to more N(A) students, given that some of them would articulate to ITE.

19.   *In addition, where resources allow and the programmes are sustainable, SERI recommends that schools consider offering 'O' level School Initiated Electives (OSIEs).* There are currently five OSIEs, viz. Business Studies, Computer Studies, Drama, Economics and PE. OSIEs enable secondary schools to develop and build upon their existing niche areas to cater to students who have the interest and aptitude in specific fields of study.

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[14] *For instance, to laterally transfer from Secondary 1N(A) to Secondary 2E, a student would typically need to pass EL and two other subjects, or pass four subjects, and have an average score of at least 70% for all the subjects he has taken.*

Creating More Pathways For Success

(A) Expanding the Integrated Programme (IP) Landscape

20.   The Integrated Programme (IP) is an alternative model of delivering upper secondary and JC education. While the GCE 'O' levels serve as a valuable intermediate benchmark for the large majority of our students, they may not be necessary for students who are clearly university-bound and can benefit from a less structured approach. Such students can better spend the last four years of their upper secondary/JC education, from Secondary 3 to JC 2, engaging in broader learning experiences, instead of preparing for two major examinations – the 'O' and 'A' levels – within the space of three years. These students would benefit from a more flexible style of education. The time freed up from not having to take the 'O' levels is spent enhancing the students' learning experience, developing their creative and critical thinking skills and by offering special leadership development and other co-curricular and community involvement programmes. IP optimises use of the students' time to provide them with more opportunities to develop their intellectual curiosity and to ensure they acquire a broad-based education.

21.   Since 2004, 11 IP schools have been established, benefiting academically able students significantly. SERI notes that entry to these programmes remains highly competitive, testimony to the strength and popularity of the IP. ***As there remains a number of academically able students who could benefit from an IP education, SERI recommends the expansion of the IP to seven more secondary schools.***[15] These seven schools will offer an IP-cum-'O' level dual track, which will allow for greater porosity between the two tracks. It reduces the emphasis on the PSLE, and provides encouragement to late bloomers who can cross over to the IP between Secondary 1 and Secondary 3. This is in line with our view that secondary schools should help students manage the transition from primary to secondary school, offer flexibility and choice, and be customised to help students discover themselves.

(B) New Through-Train Pathways for N(A) Students

Introduce DES-Polytechnic Through-Train Programme

22.   The ITE Direct Entry Scheme (DES) was implemented in 2008 as a pathway for students who do well in the 'N' levels to progress to ITE, instead of taking their 'O' levels in Secondary 5. Previously, Higher Nitec courses were open only to students who had a minimum of three 'O' level passes. Through the DES, eligible Secondary 4N(A) students enrol in ITE in January and take a 10-week preparatory course, before joining Higher Nitec courses alongside 'O' level students who enter via the Joint Admissions Exercise in April. This new pathway saves one year for a group of Secondary 4N(A) students who would not be eligible for polytechnic education after Secondary 5N and subsequently have to enrol in ITE's Nitec or Higher Nitec programmes.

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[15] *The seven schools are Victoria School and Cedar Girls' School (with Victoria JC); Methodist Girls' School (with Anglo-Chinese School (Independent)); Catholic High School, St. Nicholas Girls' School and Singapore Chinese Girls' School (with a new Government JC); and St. Joseph's Institution (which will feature a six-year International Baccalaureate Diploma programme). Temasek JC will extend its IP from the current Secondary 3 intake to a Secondary 1 intake. The expansion of the IP will take place over the next few years.*

23.   The first batch of 377 DES students in 2008 has done well, performing on par with 'O' level Higher Nitec students, including their progression rate to full-time diploma courses at the polytechnics. This suggests that the DES is a viable and meaningful pathway to the polytechnics for Secondary 4N(A) students. As such, **SERI proposes doubling the number of DES places offered to 1,000, starting from 2013** (i.e. the 2012 Secondary 4N(A) cohort), when ITE reaches its full capacity with the opening of ITE College Central. In addition, **SERI proposes that Secondary 4N(A) students who have done well in the 'N' levels be allowed to enter the DES and be assured of either a first- or second-year place in a related polytechnic course, if they meet the qualifying GPA criteria.**
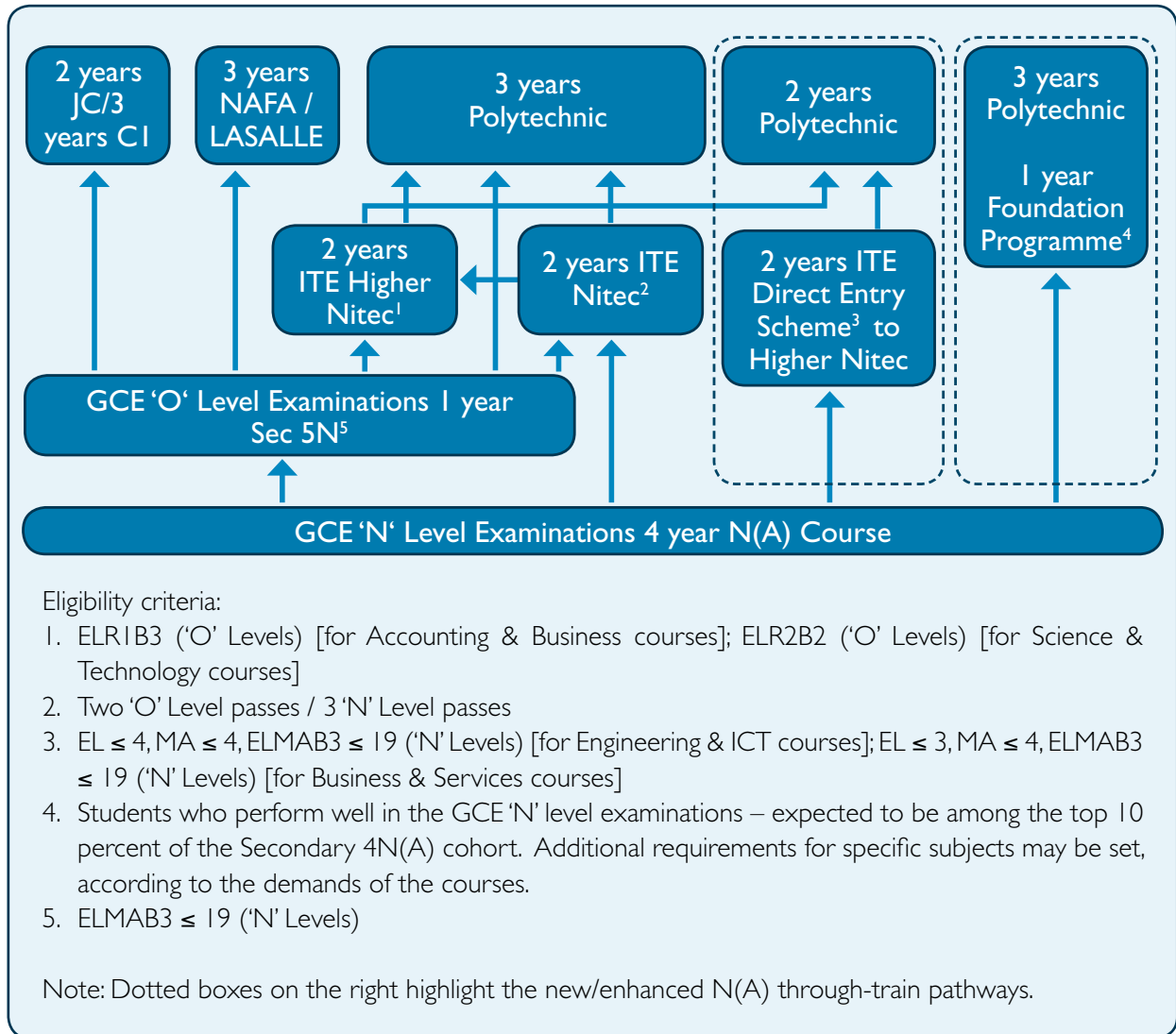
Introduce Polytechnic Foundation Programme for Secondary 4N(A) Students

24.   **SERI proposes that a 1-year polytechnic Foundation Programme conducted at the polytechnics be introduced for top Secondary 4N(A) students who can clearly benefit from a polytechnic education, in lieu of preparing for the 'O' levels.** The Foundation Programme would offer a practice-oriented curriculum taught by faculty members of the polytechnics using applied pedagogies. It would strengthen students' articulation to the polytechnics, as the curriculum would be designed with greater alignment to students' subsequent diploma courses at the polytechnics than the curriculum in the fifth year in secondary school would be able to.

25.   SERI recommends that the Foundation Programme be implemented in phases, as the polytechnics continue to expand their campus capacities. For the first phase in 2013, the polytechnics will offer a total of about 1,000 places that would articulate into a range of diploma courses. Over time, we could consider expanding the Foundation Programme to offer more places, pending a review of its outcomes.

26.   Figure 4-1 summarises the progression pathways available to Secondary 4N(A) students after their 'N' level examinations.

Figure 4-1: Pathways for N(A) Students

Eligibility criteria:
1. ELR1B3 ('O' Levels) [for Accounting & Business courses]; ELR2B2 ('O' Levels) [for Science & Technology courses]
2. Two 'O' Level passes / 3 'N' Level passes
3. EL ≤ 4, MA ≤ 4, ELMAB3 ≤ 19 ('N' Levels) [for Engineering & ICT courses]; EL ≤ 3, MA ≤ 4, ELMAB3 ≤ 19 ('N' Levels) [for Business & Services courses]
4. Students who perform well in the GCE 'N' level examinations – expected to be among the top 10 percent of the Secondary 4N(A) cohort. Additional requirements for specific subjects may be set, according to the demands of the courses.
5. ELMAB3 ≤ 19 ('N' Levels)

Note: Dotted boxes on the right highlight the new/enhanced N(A) through-train pathways.

(C) Establishing Specialised Schools for N(T) students

27.   N(T) students make up about 13% of each cohort. Over the years, MOE has made several enhancements to the N(T) course. These include revisions to the N(T) curriculum to focus more on practice-oriented learning; the introduction of EMs to develop students' interests and strengths in various areas; and the designation of three schools as N(T) Mark II schools offering new specialised subjects developed in partnership with ITE. These enhancements have resulted in improved student learning and engagement.

28.   Building on these enhancements and drawing from lessons learnt from our experience with NorthLight School and Assumption Pathway School, **SERI recommends the establishment of specialised secondary schools that provide a variety of qualifications and skills certifications as an additional pathway for N(T) students.**

29.   The specialised secondary schools will offer a four-year customised programme that will prepare students for subsequent studies in ITE or employment. In addition to the N(T) subjects, students will also be able to offer industry-focused modules in a range of areas, developed in conjunction with ITE and the industry. The schools will adopt a strong focus on interactive, practice-oriented and ICT-enabled teaching methods. To ensure a holistic education experience, there will be integrated modules on Aesthetics and PE throughout their four years of learning. There will also be special programmes to address students' socio-emotional needs, personal development, and the learning of life skills. To better support the teaching of industry-focused modules that entail the handling of equipment, the new schools will have a higher teacher-to-student ratio.

30.   The schools will work in close partnership with ITE and industry partners to develop their curriculum and programmes, and to provide opportunities for attachments and internships for their upper secondary students. The new schools will be led by experienced principals with the passion to work with the N(T) students. The schools will have a good mix of MOE teachers, seconded ITE lecturers and individuals with relevant industry experience.

31.   Even as we establish the specialised schools for N(T) students, **SERI recommends studying how we can scale up the successful features and practices of the three N(T) Mark II schools across the system.** This will enable the curricular innovations in enhancing the teaching and learning of N(T) students, and in engaging them more effectively, to be spread to more secondary schools.

32.   Figure 4-2 summarises SERI's recommendations to strengthen ability-based education and to create more pathways for success for students of all courses.

Figure 4-2: Recent and Proposed Changes to Secondary Education

	Express	Normal (Academic)	Normal (Technical)
Upper Secondary	• Expand IP landscape [proposed]	• Review further adjusting Secondary 4N(A) promotion criteria [proposed] • Polytechnic Foundation Programme [proposed] • ITE DES-polytechnic through-train [proposed]	• N(T) Mark II schools • Allow N(T) students to offer N(A) subjects • Offer Elective Modules
	• Offer 'O' level School Initiated Electives, Applied Subjects and Advanced Elective Modules • EL Syllabus 2010 • Extra resources for Enhanced Art Programme (EAP) and Enhanced Music Programme (EMP); and more schools to offer Art and Music Elective Programmes • Expand subject offerings at upper secondary [proposed]		• Establish specialised schools for N(T) students [proposed] • Implement N(T) Step Curriculum [proposed]
	• Enhanced student leadership programmes • Wider choice of subject combinations • Third Languages	• Allow better N(A) students to skip the 'N' levels • Lift number of 'O' level subjects bright N(A) students can offer • Refine Secondary 4N(A) to Secondary 5N(A) promotion criteria • Introduction of ITE Direct Entry Scheme	
Lower Secondary	• Review lateral transfer criteria to strengthen alignment with articulation to post-secondary education [proposed]		
Resources and Support	• Additional resources for autonomous schools		• Head of Department (Normal courses)
	• Facilitate the production of better instructional materials to support EL and Mathematics teachers [proposed]		
	• Dedicated allied educators to support EL and Mathematics teachers [proposed]		

Leveraging on ICT to Support Learning

Chapter 5
Leveraging on ICT to Support Learning

1.   The potential of Information and Communications Technology (ICT) to support learning has grown tremendously in recent years. New ICT devices that combine computing and connectivity, such as the iPhone, have become available to the mass market and are increasingly affordable. As more students own personal smart mobile devices, which give them access to wireless networks anytime and anywhere, the way they learn and interact with their teachers and peers is being transformed. With the growing trend of students engaging in collaborative online environments such as social networks, it is also likely that these environments will become a preferred mode of learning and interaction. In anticipation of future pedagogical needs, MOE has been studying how to provide the kind of computing environment in schools that will support the pervasive use of ICT, so that it can be harnessed to support teaching, learning and assessment.

2.   At the systemic level, the 3rd Masterplan for ICT in Education (mp3), which was launched in 2009, articulated a common vision and set of targets for MOE and schools to achieve in a coordinated manner. MOE is currently conducting a review of the use of ICT in curriculum, assessment and pedagogy, to build on existing efforts and improve stakeholder engagement for the use of ICT in education. The team aims to make specific recommendations manageable by the majority of schools to achieve the goals of mp3 but without losing sight of MOE's long-term strategic direction. This will be done through strengthening the culture of pervasive and effective use of ICT.

3.   Different models of ICT infrastructure that will support the pervasive use of ICT in education are being explored. Since 2003, various schools have embarked on one-to-one (1:1) computing pilot projects, and some schools such as Crescent Girls' School have developed sustainable 1:1 computing models. In addition to curricular, pedagogical and assessment requirements, MOE has also considered the mass deployment of 1:1 computing in curricular reviews for some subjects. In line with these developments, SERI supports MOE's on-going study of the need for 1:1 access or ownership of computing devices to support pervasive ICT use. **SERI believes that ICT is an enabler that can be harnessed to support SERI's recommendations in and outside of the classroom, in both the academic and the affective domains.**

Providing More Resources to Support Our Secondary Schools

Chapter 6
Providing More Resources to Support Our Secondary Schools

1.   To enhance secondary education, we need to ensure that our schools continue to be adequately resourced, while we exercise financial prudence and discipline. The major resource implications of SERI's recommendations arise from specific areas of need, where new initiatives are required, particularly for the creation of additional pathways for secondary students, viz. expansion of the Integrated Programme (IP) landscape, N(A) through-train programmes, and specialised schools for N(T) students.

Providing Additional Manpower Resources

2.   To enhance the manpower resources for schools, MOE will provide a typical secondary school with three more teacher posts from 2011.[16] Over and above these additional posts, schools will also be provided with more teachers in tandem with the roll-out of new initiatives and programmes, such as PE teachers to support the increase in PE curriculum time. Beyond the standard provisions, MOE will continue to support secondary schools with the 12 adjunct teacher posts already provided for. To provide a stronger middle management team to support SERI's and other initiatives, we will also be increasing the number of Key Personnel[17] posts for a typical secondary school by about six.

3.   With the various additional manpower resources, the Pupil-Teacher Ratio[18] in secondary schools is expected to improve from 16:1 in 2009 to 13:1 by end 2015, while the Pupil-Educator Ratio is projected to improve from 15:1 in 2009 to 12:1 by end 2015.

Enhancing School Infrastructure

4.   Apart from the provision of additional manpower, the physical learning environment is also a key factor to effective teaching and learning. Over the medium term, MOE will continue to make enhancements to the infrastructure of secondary schools to support the key thrusts of SERI's recommendations, as well as to enhance the working environment of the teachers and staff of the schools.

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[16] *The actual distribution of additional teachers will vary from school to school based on differences in student enrolment.*

[17] *Key Personnel refers to Heads of Department, Subject Heads and Level Heads.*

[18] *The Pupil-Educator Ratio refers to the ratio of pupils to educators (education officers and allied educators).*

Conclusion

Chapter 7
Conclusion

1.   SERI's recommendations can only come into fruition with the support of our stakeholders, including parents. In implementing SERI's recommendations, MOE and schools will continue to engage our stakeholders, so that they understand the refinements that we are making to secondary education.

2.   Over the years, Singapore has built up a strong education system, which is well recognised and should be preserved. SERI's recommendations build on our successes, and strengthen our foundation by focusing on the fundamentals, which include addressing the needs of secondary students in their unique phase of adolescent development, and deepening the teacher-student relationship. On the academic front, SERI's recommendations aim to advance our ability-driven education and create pathways for students of every course to succeed and articulate to post-secondary education. SERI's proposals also aim to provide greater support for the social-emotional growth of secondary students that is essential for effective learning, more opportunities for them to discover their interests and strengths, and better educational and career guidance for them to plan their goals.

3.   With the implementation of the various recommendations, SERI believes that our secondary education will help nurture students through their adolescence, and better prepare them for learning, for articulation into post-secondary education, and for life.

Composition of Secondary Education Review and Implementation (SERI) Committee

Annex A
Composition of Secondary Education Review and Implementation (SERI) Committee

Chairman

Wong Siew Hoong
Director of Schools

Members

Dr Cheah Horn Mun
Director, Educational Technology Division

Heng Guan Teck
Deputy Chief Executive Officer (Academic), Institute of Technical Education

Ms Kok Lee Kwang
Deputy Director, Aesthetics, Health and Moral Education Branch, Curriculum Planning and Development Division

Ms Lim Huay Chih
Director, School Planning and Placement Division

Adrian Lim
Principal, Ngee Ann Secondary School

Ms Grace Ng
Deputy Director, Guidance Branch, Education Programmes Division (from Jan 2010)

Tan Peng Ann
Registrar and Director (Academic Services), Singapore Polytechnic

Mrs Tan Wai Lan
Deputy Director, Psychological Services Branch, Education Programmes Division (from Jan 2010)

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Director, Planning Division (Aug 2009 to Oct 2010)

Bob Koh Chin Nguang
Deputy Director, Sciences Branch, Curriculum Planning and Development Division (Apr 2009 to Nov 2010)

Ms Lee Shiao Wei
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