

Review of the Academic Structure of
Senior Secondary Education
(Full Version)

Table of Contents

- Chapter 1: Background, Objectives and Scope of the Review
- Chapter 2: Advantages of a 3-year Senior Secondary Academic Structure and Major Considerations
- Chapter 3: Preconditions for the Successful Implementation of a 3-year Senior Secondary Academic Structure
- Chapter 4: Initial Plan and Feasibility of Implementing a 3-year Senior Secondary Academic Structure
- (1) Curriculum Design
 - (2) Public Examinations
 - (3) Articulation with University Programmes
 - (4) Interface with Other Post-Secondary Programmes
 - (5) Feasibility of Implementing the New Academic Structure
- Chapter 5: Ways to Implement the New Senior Secondary Academic Structure
- Chapter 6: Assessment of the Timetable for Implementing the New Academic Structure
- Chapter 7 : Resource Assessment
- Chapter 8: Education Reform Measures to be Forged Ahead Before Switching to the New Senior Secondary Academic Structure
- Chapter 9: Conclusion
- Appendix I : Membership of the Working Group on the Review of the Academic Structure for Senior Secondary Education and Interface with Higher Education
- Appendix II : Comparison with the Senior Secondary Curricula and Public Examinations of Other Places
- Appendix III : Examples of Timetabling Arrangement Under the New Senior Secondary Curriculum

Appendix IV : Preliminary Curriculum Framework of Different Key Learning Areas and Liberal Studies for the New Senior Secondary Curriculum

Appendix V : Academic and Professional Bodies whose Views on their Expectations of Secondary School Graduates and University Admission Criteria have been Sought

Appendix VI : The Existing Senior Secondary Curriculum Reform Timetable

Chapter 1: Background, Objectives and Scope of the Review

Background

1.1 In 1998 to 2000, the Education Commission (EC) conducted a comprehensive review of the overall education system in Hong Kong. It then submitted the report *Reform Proposals for the Education System in Hong Kong* to the Government in September 2000, putting forward the idea of a 3-year senior secondary academic structure. The EC also pointed out that a number of conditions and detailed preparations were required for implementing the new academic structure, and recommended that a Working Group be set up to examine closely the feasibility, specific measures, transitional arrangements and timetable of implementing the new system.

1.2 The Chief Executive endorsed the reform proposals of the EC in his Policy Address in October 2000. A Working Group was formally set up in December 2000 to review the academic structure for senior secondary education. Membership of the Working Group is at Appendix I.

Objectives and Scope of the Review

1.3 The Working Group has completed the review of the academic structure for senior secondary education and submitted its report to the EC. This report aims to brief the public on the views put forward by the EC in relation to the following matters after considering the recommendations of the Working Group:

- (i) Advantages of a 3-year senior secondary academic structure and major considerations;
- (ii) Pre-conditions for the successful implementation of a 3-year senior secondary academic structure;
- (iii) Initial plan and feasibility of implementing a 3-year senior secondary academic structure;
- (iv) Education reform measures to be forged ahead before switching to the new senior secondary academic structure; and
- (v) Timetable for implementation.

1.4 Various issues relating to the implementation of the 3-year senior secondary academic structure need to be covered in this review; namely:

- (i) Development and implementation of a new curriculum for senior secondary education;
- (ii) Design and adoption of a new public examination and the way to secure its recognition both locally and internationally;
- (iii) Construction of new schools and re-organisation of class structure;
- (iv) Adjustments to universities' curriculum and admission system;
- (v) Interface of the new curriculum with other post-secondary programmes; and
- (vi) Resource implications of a 3-year senior secondary academic structure and extending the first-degree programmes.

1.5 This report examines in detail matters requiring consideration in implementing the 3-year academic structure of senior secondary education. It also makes recommendations in respect of matters mentioned in paragraph. 1.3 above.

Chapter 2: Advantages of a 3-year Senior Secondary Academic Structure and Major Considerations

2.1 Education must be responsive to the overall development of society so as to groom talents and lay a solid foundation for the sustained development of our community.

2.2 In the 21st century, the emergence of new knowledge, economic structural changes and societal changes all happen at a much faster pace than before. The ability to create, acquire, and apply new knowledge has become the key to competitive edge for any regions, trade, organisations and persons. Capacity for self-learning and the ability to adapt, create, communicate and cooperate with the others have proven to be the essential qualities for any persons to survive in the society. Self-confidence, perseverance, integrity, horizon, vision and commitment are qualities which underline the sustained progress of any community. Hence, it is incumbent upon secondary education to lay a strong foundation for students' lifelong learning and all-round development through providing an ideal environment for students to build a broad and sound knowledge base, develop higher-order thinking and cultivate a self-learning attitude. Tertiary education should build upon secondary education and further enhance the breadth and depth of students' knowledge, their ability and quality with a view to providing the talents needed to advance social, economic and cultural development.

Drawbacks of the Current Academic Structure

2.3 At present, secondary schools adopt a '5+2' academic structure and students have to participate in two high-stake examinations, i.e. the Hong Kong Certificate of Education Examination (HKCEE) and Hong Kong Advanced Level Examination (HKALE) respectively after completing Secondary 5 (S5) and S7. As a result, the design of our senior secondary curriculum, the mode of classroom learning and teaching, and the deployment of learning time are largely examination-oriented. Moreover, the curricula of S6 and S7 are essentially tailored to prepare students for admission to universities. As a result, the content tends to be difficult and specialised. This is not in line with the aims and objectives of education for the 21st century, and which are to broaden the horizon of students and consolidate their basic knowledge.

Educational Philosophy of a 3-year Senior Secondary Academic Structure

2.4 The adoption of a coherent 3-year senior secondary academic structure will facilitate the development of a more flexible cross-discipline curriculum. Under the new structure, students will be able to widen their horizon and consolidate their knowledge base through a more coherent and diversified senior secondary education. Furthermore, with fewer public examinations to attend to, students will be able to spend more time on enhancing their language proficiency and important generic skills. Compared with the existing structure, this new structure is more conducive to an overall enhancement in knowledge, ability and quality of our students to meet the needs of the community in the 21st century.

Articulation with University Programmes

2.5 A 16-year academic structure for primary, secondary and tertiary education is the prevailing mainstream academic structure internationally. Therefore, concomitant with the adoption of a '3+3' academic structure in secondary education, local universities' first-degree programmes will have to be extended for one year, i.e. from the current 3-year structure to a 4-year one. Besides a better interface with the most commonly adopted structure internationally, a 4-year first-degree structure can also provide greater room for universities to increase curriculum choices and groom students' personal attributes. This is conducive to broadening students' horizon and facilitating their all-round development. Under the new structure, students will be able to attempt courses of different disciplines in their first year of university education with a view to identifying their aptitude and abilities before deciding on their majors. Consequentially, universities may consider admitting students at the faculty level instead of the department level to avoid early specialization. When considering admission, academic and non-academic performances (e.g. interviews and schools' internal assessment, etc.) other than public examination results should be taken into account.

Articulation with Overseas Academic Systems

2.6 As most countries, including the United States and major provincial cities of China, adopt a 12-year structure for primary and secondary education and a 4-year structure for tertiary education, the switch to a 3-year senior secondary academic structure should on the whole better enable our education system to articulate with those outside Hong Kong. However, the switch will require a new mode of articulation between our secondary school curriculum with the education systems of Britain and a small number of countries.

Recognition of Public Examinations

2.7 The current HKCEE and HKALE are well recognized both locally and overseas. Some people have referred to the risk of replacing them with a new public examination. However, after thorough deliberation with the Hong Kong Examinations and Assessment Authority (HKEAA), the Working Group considers that with sufficient time for preparation and detailed planning, the HKEAA is capable of devising a new and widely recognised public examination.

Diverse Interests and Abilities of Students

2.8 Under the new '3 + 3' academic structure, most students will have the chance to take six years of secondary education. Students' learning diversity will thus be more pronounced. Therefore, schools will have to provide a more diversified curriculum to cater for different interests and abilities of students. Teachers will also have to adjust their teaching concepts and strategies.

Conclusion

2.9 Having regard to the above major considerations and analyses, we believe that a 3-year senior secondary academic structure will provide students with a more coherent and richer senior secondary education. This change is not only in line with the philosophy of the education reform, it also represents a better academic structure. In addition, the corresponding change in university academic structure can create more room for strengthening and broadening university education, thus enhancing the quality of our students in a more holistic manner. Adopting the new structure is therefore beneficial to the entire Hong Kong education system. Nevertheless, the successful implementation of the new senior secondary academic structure hinges on securing all the necessary pre-conditions, including the development of the relevant measures and the availability of the necessary additional resources. Details of the pre-conditions of implementing the new structure are given in the next chapter.

Overseas Situations

2.10 In the course of the review, we have looked into the academic structure and curriculum of senior secondary education and the related public examinations in a number of major cities, regions and countries, including Australia (New South Wales and Victoria), the United Kingdom, the United States (California), Canada (Ontario) and Mainland China (Beijing, Shanghai and Guangdong Province). Relevant findings are summarised in Appendix II for reference. The findings indicate that a 12-year primary and secondary education is the mainstream structure internationally, and most of the senior secondary curricula require students' exposure to different learning areas in order to build a broader knowledge base. Some of these places require students to take public examinations after the completion of senior secondary education. Australia has even incorporated school-based assessment into the public examinations results.

Chapter 3: Preconditions for the Successful Implementation of a 3-year Senior Secondary Academic Structure

3.1 The successful implementation of a 3-year senior secondary academic structure will depend on a number of factors, which include the design of a new curriculum and public examinations, sufficient preparation of schools and teachers, availability of new school buildings, support of teachers training institutions as well as the coordination of the new structure and other education facets.

(i) Development of an Appropriate Curriculum and Public Examination

3.2 Academic structure is but a framework. What really determines the quality of education are the curriculum, methods of teaching, quality of teachers, teaching resources and other relevant supporting measures. Therefore, a new curriculum which is capable of bringing about the merits of the new academic structure, comparable to international standards and meets community's needs must be developed before changing the academic structure of senior secondary education. Subject combination and curriculum contents must be flexible and diversified to cater for students' diverse learning needs and abilities, and to help realise individual's potential. At the same time, the HKEAA must develop a new public examination to replace the HKCEE and HKALE. This new public examination must interface well with the new curriculum and capable of gaining local and overseas recognition.

(ii) Sufficient Preparation on the Part of Schools and Teachers

3.3 For the new academic structure and curriculum to achieve the desired effect of upgrading the quality of education and promoting diversified development of students, principals and teachers must make adjustments to the teaching concepts, design of curriculum, as well as teaching strategies and skills. Hence, schools and teachers must be given ample time and room to make preparations in aspects such as resources, training and management. To a large extent, the readiness of schools and teachers also hinges on the effectiveness of the various education reform measures currently underway.

(iii) Re-organization of Class Structure and Provision of Additional Schools

3.4 At present, in public sector schools, only about 34% of S5 students can proceed to a 2-year S6-S7 programme. After implementing the 3-year academic structure, sufficient school places should be provided to allow all secondary students to undertake the 3-year senior secondary education. Hence, class structure must be reorganised to provide more S6 school places, abolish all floating classes at S6 and S7 and create more room for schools to introduce a diversified curriculum. After reorganisation of class structure, some schools will have the number of classes and hence the establishment of teachers reduced. The Education and Manpower Bureau (EMB) estimates that the number of teaching posts

rendered redundant during the transitional period totals around 2 000.

3.5 EMB assesses that, assuming 40 students per class and the abolition of all floating classes, at least 34 additional schools must be built. These new schools should be completed in phases three years before the switch to the new academic structure, so that the reorganisation of the class structure of some of the existing schools can be introduced progressively from S1.

(iv) Recruitment of Additional Teachers

3.6 The 34 additional schools and around 30 schools whose number of classes will increase following the class structure reorganization will require a total of around 1 500 additional teaching posts. Furthermore, in the last year of transition when S7 will be operating in parallel with Senior Secondary 3 (SS3) under the new structure, some 1 500 additional temporary teachers will be required.

(v) Enhancement of Teachers Training

3.7 The number of places in teachers training institutions needs to be adjusted several years before the introduction of the new academic structure to provide training for the additional teachers required. The programme content also needs to be modified to equip teachers with the requisite professional knowledge, skills and attitude, so that they will be able to help students participate in cross-discipline learning and develop good life-long learning ability and human qualities. The programmes should also enable teachers to handle different abilities and needs of different students through the deployment of appropriate and diversified teaching and assessment methods.

(vi) Articulation with First-degree Programmes

3.8 After a 3-year academic structure is adopted, the first-degree courses will have to be extended for one year. The total number of undergraduates may as a result increase by up to a third. Universities will have to expand their facilities and teaching staff. They should also modify their curriculum and admission system to tie in with the shift in focus of the secondary and university curricula as well as the mode of assessment so as to optimise the benefits of the new academic structure.

(vii) Collaboration with Other Post-secondary Institutions

3.9 Other post-secondary institutions should also adjust their programmes for a better interface with the change in academic structure of senior secondary education. A transferable credit unit system should be promoted to pave the way for a multi-channel learning system. The EMB is now working on the establishment of a qualifications framework and a quality assurance mechanism to facilitate learners to establish their learning targets and pathways.

(viii) Significant Resource Requirement

3.10 The preliminary estimate is that implementing a 3-year senior secondary academic structure will require additional non-recurrent expenditure of \$3.848 billion and recurrent expenditure of \$1.539 billion. Extending the first-degree programmes by one year will require additional non-recurrent and recurrent expenditures of \$7.2 billion and \$2.3 billion respectively. Further illustrations are given in Chapter 7.

Chapter 4: Initial Plan and Feasibility of Implementing a 3-year Senior Secondary Academic Structure

(I) Curriculum Design

4.1.1 The new curriculum of senior secondary education should be in line with the overall objectives of the education reform. Its design should capitalise on the additional space created by a three-year senior secondary education and a reduction in the number of public examinations for grooming students' whole-person development, enriching their learning experience, and helping them develop the abilities and qualities mentioned in paragraph 2.2 of Chapter 2.

(i) Features of the New Curriculum

4.1.2 Given the above considerations, we are of the view that the new curriculum should have the following features:

- To be implemented on the basis of the on-going curriculum reform with a view to widening the knowledge base, developing high-order thinking and promoting whole-person development of students;
- To introduce greater variety and flexibility in the selection of subjects to cater for the different interests and abilities of students. For example, consideration should be given to offering elective modules for some subjects, dividing subjects into core and extension parts, and scheduling lessons in a flexible manner;
- To pitch the curriculum at international standards so as to meet the needs and expectations of the community and ensure proper articulation with the programmes of overseas universities;
- To adopt a diversified mode of assessment and academic certification including assessment of students' performance based on student portfolios, internal assessment, and results of other internationally recognised examinations, etc. to help realise the diversification of learning objectives and processes;
- To reduce the number of subjects to be examined without compromising the academic standard of students so as to enhance the space for learning and learning motivation; and

- To encourage cross-curricular and inquiry-based approaches to learning to help students develop self-learning ability and life-long learning attitude.

Development on the Basis of the On-going Curriculum Reform

4.1.3 The Curriculum Development Council (CDC) published a strategy of curriculum development in 2001 with proposals to equip students with the ability of “learning to learn”. Schools are advised to help their students develop, through teaching and learning in different key learning areas (KLA), the nine generic skills of collaboration, communication, creativity, critical thinking, information technology, numeracy, problem-solving, self-management and study. It also stresses that knowledge, attitude and ability are of equal importance and proposes that school curriculum should provide students with learning experience in the five areas of ethics, intellect, physique, social skills and aesthetics:

- Moral and civic education
- Intellectual development
- Community service
- Physical and aesthetic development
- Job-related experience

4.1.4 The CDC has devised a timetable to introduce progressively reforms to the curricula of primary and secondary education, including changes to some of the subjects at the S4/S5 and S6/S7 levels. The purpose is to reinforce the development of the nine generic skills and five learning experiences mentioned above. We propose that the new curriculum under the 3-year senior secondary academic structure should be developed on the basis of the present curriculum reform. The space brought about by the new structure should be utilised for a more effective attainment of the objectives of the education reform in enabling students to have an all-round development that best suits their individual aptitude.

4.1.5 Admission criteria of universities are the determining factors of the choice of subjects taken by senior secondary students. At present, the choice is generally confined to a few learning areas. This has hindered the development of a broad knowledge base, and is unfavourable to the whole-person development of students. With the adoption of a 3-year senior secondary academic structure, first-degree programmes will be extended to four years so that there should be more room for universities to relax their admission requirement in respect of subjects taken by students at secondary level. Students can then have greater flexibility to take subjects straddling different learning areas thereby broadening their knowledge base.

4.1.6 Moreover, to cope with the changing social environment of the 21st century, the focus of the newly designed curriculum should be on developing students’ ability in higher-order thinking. In order to attain a balanced development, we also propose that students be provided with experiential learning in physical and arts education during their 3-year senior secondary education.

Greater Choice and Flexibility

4.1.7 To ensure that all students are given the opportunity to attain an all-round and balanced development, the senior secondary curriculum should also cater for different aptitudes and abilities of students. Courses available for selection should therefore include academic-oriented, practical-oriented, vocational-oriented and integrated-oriented subjects. Consideration should also be given to offering elective modules for some subjects so that students can take those courses that best suit their interests and abilities. In addition, schools can collaborate with each other or with some other institutions (e.g. Vocational Training Council) to provide students with a wider choice of subjects/learning modules. Some of these courses may include practical training or provide qualifications accreditation by relevant professions so that they will be more useful and better received by the community.

4.1.8 Some academic subjects may also be divided into two parts, namely the core and the extension parts. Students can choose to study only the core part, which will be designed as a 2-year programme. Having completed the 2-year core portion of the subject, students can focus their study on subjects yet to be finished, or participate in other life-wide learning activities in the third year of senior secondary education (SS3).

4.1.9 Regarding scheduling of lessons, we hope that schools will try their best to provide students with a wider choice of different subject combinations. Relevant examples are given in Appendix III. Moreover, if lessons of the same subject can be arranged in such a way to allow students of different forms to attend, students who have failed in one or two subjects in SS1 may retake those subjects without the need to repeat SS1. Relevant examples are given in Appendix III. Moreover, for those students who find the subjects they have chosen do not suit their interests and abilities after completion of SS1, they may still choose other subjects. Though normally they can only finish the core part of the newly elected subjects upon completion of SS3, we believe their learning motivation and performance should be enhanced under a more flexible curriculum arrangement, as the subjects they take are more in line with their interests.

Development of a Curriculum of International Standard

4.1.10 In developing a new curriculum of senior secondary education, we propose that the CDC and HKEAA should make reference to similar curricula adopted by other major cities, regions and countries. This is to ensure that the new curriculum is of international standard and articulates with the matriculation and undergraduate programmes of other places. In addition, the CDC and HKEAA should also work closely with other concerned parties (such as universities, employers, parents, and teachers) to ensure that the new curriculum meets the needs and aspirations of the community.

Adopting a Diversified Mode of Assessment and Academic Certification

4.1.11 We expect the university admission system will be adjusted to take into account students' performance in different areas. In addition to achievements in public examinations, other forms of academic certification including school-based assessment results,

student portfolios, international examination results and interview performance etc. should be considered. Moreover, teachers are also encouraged to adopt a more diversified mode of assessment to help realise the objective of diversifying learning targets and experiences. In addition, academic certification other than public examination results needs to be explored and included in the school curriculum, so that students can select subjects that best suit their needs and obtain useful qualifications. Schools may consider adopting the following modes of assessment:

- (a) Students' learning portfolios — A record of academic and non-academic learning activities participated by the student in secondary school, remarks of his/her performance by teachers or other relevant parties, and samples of his/her work;
- (b) Internal assessment reports — A comprehensive appraisal of the student's knowledge, attitude and ability based on his/her performance in various types of formative and summative assessments (for example, observations regarding his/her performance in class and during the process of project learning; assessment of reports and assignments submitted in the form of writing, drawing or oral presentation; self-assessment and peer-assessment etc.);
- (c) Results of public examinations for secondary school graduates;
- (d) Apart from (c) above, any other qualifications recognised by professional bodies and tertiary institutions; and
- (e) Internationally recognised examinations, such as TOEFL, IELTS and GCE A-level etc.

Reducing the Number of Subjects to be Examined

4.1.12 Under the new system, we propose that except for the minority of students who are very competent and have attained outstanding academic results and balanced whole-person development, the average students should not take more than six subjects in public examinations. The purpose is to create more room for students so that they can learn, according to their interests, in a more focussed or diversified way. As a result, their motivation and performance in learning will be enhanced. Students can also participate more in co-curricular activities including community service, visits, physical exercises and cultural activities so as to broaden their horizon and develop their potential.

Encouraging Cross-curricular and Inquiry-based Approaches to Learning

4.1.13 Under the new senior secondary curriculum, we propose that every senior secondary student should take Liberal Studies (tentative title)¹, so that they will be able to analyse practical problems from a wider perspective by applying cross-curricular concepts and knowledge. We also encourage schools to minimise the use of instruction-style of learning, and provide students with greater opportunities to acquire knowledge through actual participation, exploration and research. This will help students learn how to learn and experience the joy of learning, and eventually develop self-learning ability and a culture of life-long learning.

(ii) Proposed Subject Combination

4.1.14 We propose that Chinese Language, English Language, Mathematics and Liberal Studies be offered as compulsory subjects under the new senior secondary curriculum. In addition, students are required to take two elective subjects according to their interests and abilities. They can then make use of the remaining time to acquire knowledge in other learning areas, participate in various kinds of co-curricular activities or engage in enrichment courses. The more able students can, after consulting their teachers, take one more elective subject. In brief, we propose the following subject combination:

Chinese + English + Mathematics + Liberal Studies + two elective subjects + other learning experiences
--

4.1.15 The aim is to promote students' Chinese and English language and numerical skills as well as an ability to apply knowledge in everyday situation. This combination will also provide greater scope for students to engage in diversified learning and whole-person development. The initial design of Liberal Studies and other subjects in the eight key learning areas under the new curriculum are given in Appendix IV.

¹ The proposed Liberal Studies will include different modules. Students should, taking into consideration their elective subjects, choose those modules that will enable them to gain a comprehensive learning experience, thus fulfilling the objective of ensuring that students, irrespective of whether they are in the science or arts streams, would gain exposure to the discipline of the other stream.

(iii) Proposed Time Allocation Arrangement

4.1.16 We propose that the proportion of time allocated for different learning activities under the new curriculum should be as follows:

Subject/Learning Activity	Proportion
Chinese Language	12.5%
English Language	12.5%
Mathematics	10%
Liberal Studies	15%
Elective Subject 1	10%
Elective Subject 2	10%
Enhancement and Remedial Measures (e.g. take up a third elective subject or engage in enrichment courses)	10%
Acquiring other learning experiences ² , for example:	
Physical Learning Experience	5%
Aesthetic Learning Experience	5%
Moral and Civic Education	5%
Community Service / Job-Related Experiences	5%

(iv) Developing a New Curriculum for Senior Secondary Education

4.1.17 Our preliminary proposals on a 3-year senior secondary curriculum are given in the above paragraphs. They may serve as a reference when developing a new curriculum for senior secondary education. We suggest that when the CDC formally embark on developing the new curriculum, they should refer to the findings of the mid-term review of the present curriculum reform. They should learn from the experience of the first stage of the reform before drawing up in detail the framework, criteria to assess quality and content of the new curriculum. The education sector and members of the public should also be consulted on this matter.

² The school should allocate 20% of its teaching time to engage students in moral and civic education, important learning experiences that are job-related and conducive to their physical and aesthetic development, thereby achieving the objective of whole-person development. These learning experiences can be integrated with the teaching and learning of subjects of all KLAs and learning activities conducted inside or outside classrooms.

(II) Public Examinations

4.2.1 At present, secondary education is largely examination-oriented. We hope that universities, in considering the admission of students, will give due regard to not only public examination results but also other areas of academic and non-academic performance of students. This arrangement will provide greater scope for secondary schools to adopt a diversified mode of assessment. However, we envisage that public examinations will continue to serve as a basis for determining qualifications and selection of students in the foreseeable future. In this regard, due attention should be given to the design of the new public examination which, in our view, should have the following features:

- They should integrate with the senior secondary curriculum and emphasise assessing students' higher-order thinking and ability to acquire and apply basic concepts and knowledge effectively;
- They should provide clear assessment criteria : The adoption of standards-referencing in individual subjects with a view to providing a clear indication of the standard of students obtaining different grades;
- Flexibility should be provided for students to sit for the new public examinations as private students at different stages of their senior secondary education based on individual needs; and
- They should be recognised by local and overseas universities and institutions to facilitate students to further their studies or seek employment.

(i) Integration with the New Curriculum of Senior Secondary Education

4.2.2 Given the emphasis of the proposed senior secondary curriculum, which is to develop the communication, analytical and problem-solving skills of students and to promote self-learning and creativity, the focus of the new public examination should be on assessing candidates' higher-order thinking and ability to acquire and apply basic concepts and knowledge. If some of the subjects provide the core and extended parts, the HKEAA should devise proper arrangements, especially in terms of giving appropriate certification to candidates who take the core part only.

4.2.3 Furthermore, the CDC and HKEAA should work together to examine how to integrate the school-based assessment into the public examination.

(ii) Provision of Clear Assessment Criteria

4.2.4 The present mechanism of grading examination results in the HKCEE and HKALE is to apply the norm-referenced approach to assess students' performance in schools belonging to the control group. Once the cut-off score of each grade is determined, the grading scheme will be applied to all candidates. While this mechanism can perform the function of selecting candidates on the basis of their performance and ensure grade comparability across years, it cannot reflect clearly the basis of knowledge and skills acquired

by a candidate. Some places (such as New South Wales of Australia) have adopted the standards-referenced approach under which the standards of assessment for different levels of different subjects are drawn up and samples of test items and answers of candidates scoring a particular grade level are provided to enable all relevant parties (such as teachers, students, tertiary institutions, employers) to have a clearer picture of the standards of different grade-holders.

4.2.5 The HKEAA is now exploring the feasibility of using the standards-referenced approach in public examinations in Hong Kong. A trial run for the subject of English Language in the HKCEE has been scheduled. This mechanism, if proved feasible, will be extended to other subjects as appropriate. Subject to the outcome of this study, the standards-referenced approach may be adopted for public examinations of some of the subjects under the proposed 3-year senior secondary academic structure.

(iii) Greater Flexibility

4.2.6 At present, students are usually required to complete the senior secondary or matriculation courses before sitting for the HKCEE or HKALE. To introduce greater flexibility to the system of examination, the HKEAA has decided that with effect from 2003, S6 students with outstanding performance in the HKCEE will be allowed to take the HKALE one year earlier. We propose that in designing the new system of public examination, consideration should be given as to whether students should be allowed to take part in the examination as private candidates before completing the 3-year senior secondary curriculum. This arrangement will help address the different needs of students, e.g.:

- (a) Some students may, for personal reasons, want to leave school after completing SS2, and they may need some kind of academic certification for the purpose of employment or enrolment in other programmes;
- (b) Some outstanding students may wish to complete their senior secondary education earlier, and they need public examination results for admission to tertiary institutions; and
- (c) Some students may choose to study only the 2-year core programmes of certain subjects, and may wish to take the examination as soon as they have finished the programmes so that they can focus on other subjects in SS3.

4.2.7 In principle, we encourage all students to complete and hence obtain the benefits of the full curriculum of 3-year senior secondary education. Nevertheless, the system should be flexible enough to allow students to decide, based on individual needs and circumstances, whether to take the new public examination as private candidates before completing the 3-year senior secondary education. As a matter of fact, in some places, for example Mainland China, the United Kingdom and France, secondary school students are allowed to attend examinations of some of the subjects before graduation. This is to alleviate the pressure and workload in preparing for the examination in one go after completing the whole secondary curriculum.

(iv) Local and International Recognition

4.2.8 One of the major functions of public examination is to provide academic certification for candidates to pursue further studies or seek employment. Therefore, the extent of recognition of a public examination is crucial to the candidates. We suggest that the HKEAA, in drawing up the assessment criteria and mechanism for the new public examination, should fully consult the relevant parties, including tertiary institutions, employers, teachers and parents, to ensure that the criteria are in line with the aspirations and needs of the community. Moreover, we propose that the HKEAA should liaise early with the relevant organisations (e.g. academic accreditation authorities and tertiary institutions) of other major cities or countries, with a view to securing recognition of the new examination, thereby facilitating candidates to seek employment or pursue studies abroad.

(III) Articulation with University Programmes

4.3.1 Secondary and university education have different roles and functions, with different scope and focus in their curricula. Notwithstanding this, it is imperative that the two levels of education should interface well with each other to ensure coherence in learning. Moreover, the admission system of university also plays a critical role in shaping the interface. With the implementation of a 3-year senior secondary academic structure, university curriculum and admission system will have to be adjusted to ensure a proper interface between the two levels of education.

4.3.2 In the course of the review, the Working Group exchanged views with different university faculties and professional bodies to gauge their expectations of secondary school graduate and their preliminary views on the admission system and first-degree programmes under the new academic structure. A list of the academic and professional bodies which participated in the discussion is at Appendix V. Main points are given below.

(i) Expectations of Secondary School Graduates

4.3.3 In general, universities are of the view that secondary education should focus on helping students lay a solid foundation for life-long learning. It should also help foster good attitudes and values. They expect that secondary school graduates should possess the following qualities:

- (a) Good language skills; and in particular, students should be biliterate and trilingual;
- (b) Good generic skills including interpersonal, communication, analytical and problem-solving skills;
- (c) A broad knowledge base, and are capable of acquiring and applying key concepts and basic knowledge to solve problems of everyday life, leaving more specialised or higher-level learning in individual disciplines for the university level;
- (d) Adequate knowledge of social affairs and an international outlook;

- (e) Capacity for proactive learning; and
- (f) Ability to be creative, self-disciplined and confident, having respect for others and a sense of responsibility.

4.3.4 Only a small number of academic faculties, such as Medicine and Engineering, require candidates to have, on top of the above-mentioned qualities, attained a prescribed standard in specified subjects before admission.

(ii) University Admission System

4.3.5 The criteria for admission to university have a direct bearing on how learning and teaching are conducted in secondary schools. Therefore, whether the change in senior secondary academic structure will achieve its intended objective of providing students with a more comprehensive and better quality education hinges very much on universities' approach towards admission of students.

4.3.6 If universities wish to admit secondary school graduates with the qualities mentioned in para 4.3.3 above, they should adopt these qualities as the admission criteria, which will in turn encourage secondary schools to pay more attention to the development of these qualities.

4.3.7 We recommend the following adjustments be made to the university admission system so as to be in line with diversified curriculum in secondary education:

- (a) The subject requirements for admission be relaxed to allow secondary students greater flexibility to choose subjects of different learning areas and thereby broadening their knowledge base;
- (b) Student admission be coordinated at the faculties level so as to avoid premature specialization. In addition, students' performance other than their public examination results (for example, the students' internal assessment results and their performance during interviews) should also be considered; and
- (c) Currently, the minimum requirement for admission to a first-degree programme is a pass in any two subjects in the HKALE plus a pass in both Use of English and Chinese Language and Culture in the Hong Kong Advanced Supplementary Level Examination. If Chinese, English, Mathematics and Liberal Studies are compulsory subjects in the new curriculum and students are normally required to take two other elective subjects, we hope that corresponding adjustments will be made to the admission requirements of universities.

(iii) First-degree Programme

4.3.8 Our universities generally agree that with the implementation of the new academic structure, the focus of the secondary curriculum should be on nurturing students' learning abilities, broadening their knowledge base as well as enhancing their personal qualities. They also generally agree that the secondary curriculum should be broadened, with the standard set between the HKCEE and the HKALE levels; and that consequently, the structure and contents of our first-degree programmes also need to be adjusted accordingly. The universities and the CDC must maintain close contact and effective communication, so as to ensure a proper articulation between the secondary curriculum and the university curriculum.

4.3.9 Moreover, some first-degree programmes, depending on their nature, may need to be modified substantially to dovetail with the new senior secondary curriculum. The Working Group has discussed the issue with individual faculties. Some of them anticipate that with the extension of the first-degree programmes for one year, there will be more room for university to enhance liberal education and language enhancement. Moreover, students will be given exposure to learning areas other than their major subjects to broaden their horizon and learning experience. In addition, some faculties will be able to allow their students to study different subjects in the first year and decide on their major subjects in the second year when they have sufficient knowledge of the nature of the relevant subjects and their own interests.

(IV) Interface with Other Post Secondary Programmes

4.4.1 At present, there is a wide range of learning opportunities for secondary graduates to continue their study, such as diploma courses, Associate Degree foundation courses, Project *Yi Jin*, higher diploma courses and Associate Degree programmes. After a 3-year academic structure is adopted, the entry requirements, course contents and qualifications to be awarded upon completion of these programmes, which are designed for secondary graduates, will have to be modified in the light of the changes in the new curriculum of senior secondary education. We envisage these programmes will generally admit SS3 graduates of the new academic structure (equivalent to the existing S6 level).

(V) Feasibility of Implementing the New Academic Structure

4.5.1 The change in the senior secondary academic structure involves many issues, including the design of a new curriculum and public examination, building of new schools, interface between the new curriculum with programmes of other educational and training institutions, preparation of schools and teachers, and other transitional arrangements. Given the importance and magnitude of these interrelated issues, careful planning and provision of sufficient resources are required before the new structure can be implemented step by step.

4.5.2 Having fully considered all the related issues, we are of the view that it is feasible to implement the 3-year senior secondary academic structure in Hong Kong. The key to success is the provision of sufficient lead-time and resources so that the new academic structure can be implemented in a steady but progressive manner and be able to achieve the

desired result of giving more room for students to learn. The ways to implement the new structure, the timetable for implementation and the resources involved will be discussed in greater detail in Chapters 5 to 7.

Chapter 5: Ways to Implement the New Senior Secondary Academic Structure

5.1 On the transition from the existing post-S3 “2+2” academic structure to the new 3-year senior secondary structure, we have considered the following two options:

- schools switching to the new structure by batches and in phases;
- one-off and across-the-board switch to the new structure.

5.2 Both options have their respective merits and specific problems that have to be solved. These are detailed in the following paragraphs.

(a) Schools Switching to the New Structure by Batch and by Phase

5.3 Assuming that all secondary schools are divided into three batches, schools in the first batch will take the lead to switch to the new structure starting from SS1 level, while schools in the second batch will make the change at the SS1 level in the following year. In the third year, all S4 classes will have changed to SS1. Regarding the change in the academic structure of universities, by the time the SS3 students of the first batch of secondary schools graduate, all the universities will have to adjust their first-degree programmes to cater for the enrolment of both S7 and SS3 graduates in the same year.

5.4 The following table highlights the course of change under this option.

Table (1) :

	1st year ⁽¹⁾	2nd year	3rd year	4th year	5th year	6th year	7th year
S4/ SS1	53 334 26 666	26 666 53 334	80 000	80 000	80 000	80 000	80 000
S5/ SS2	80 000	53 334 26 666	26 666 53 334	80 000	80 000	80 000	80 000
S6/ SS3	27 200	27 200	18 134 26 666	9 066 53 334	80 000	80 000	80 000
S7	27 200	27 200	27 200	18 134	9 066	—	—
Total number of SS students	214 400	214 400	232 000	240 534	249 066	240 000	240 000
Year 1 of the 4-year undergraduate structure	—	—	—	4 833 ⁽³⁾	9 667	14 500	14 500
Year 1 of the 3-year undergraduate structure/ Year 2 of the 4-year undergraduate structure	14 500 ⁽²⁾	14 500	14 500	14 500	9 667 ⁽⁴⁾ + 4 833	4 833+ 9 667	14 500
Year 2 of the 3-year undergraduate structure/ Year 3 of the 4-year undergraduate structure	14 500	14 500	14 500	14 500	14 500	9 667+ 4 833	4 833+ 9 667
Year 3 of the 3-year undergraduate structure/ Year 4 of the 4-year undergraduate structure	14 500	14 500	14 500	14 500	14 500	14 500	9 667+ 4 833

From table (1) above, it can be seen that all secondary schools will have switched to the 3-year senior secondary structure in the sixth year of transition.

Note⁽¹⁾ It is assumed that the total number of S4/SS1 students is 80 000 per year and all SS1 students will progress to SS2 and SS3, and that about 34% of S5 students will progress to S6 and S7.

⁽²⁾ It is assumed that the number of first-year intake remains at 14 500 and the numbers for the 2nd year and 3rd year are the same as the 1st year.

⁽³⁾ In the third year of the transition, some 26 666 SS3 students will graduate, which is equivalent to one-third of the total number of SS3 students when the 3-year academic structure is fully implemented. Consideration should therefore be given as to whether universities should provide additional year 1 places, under a 4-year undergraduate structure, equivalent to one-third of the first-year first-degree places under the old 3-year structure, so as to cope with the demand of the first batch of SS3 graduates.

⁽⁴⁾ The number of S7 graduates will be reduced by a third in the fourth year of the transition so that places for year 1 students under the 3-year structure should accordingly be reduced by the same proportion in the fifth year of the transition. At the same time, 4 833 year-1 students enrolled in the previous year under the 4-year structure will progress to year 2.

(i) Merits

This option has the following merits:

- Schools that are better prepared can make the change first. The experience they have accumulated in developing the new curriculum and the teaching materials they produced can serve as useful reference for other schools.
- The number of parallel S7 classes under the old structure and SS3 classes under the new structure can be reduced during the transition. Therefore, the number of additional temporary teachers required in the transition can be reduced accordingly.

(ii) Problems to be Solved

- The HKEAA will be required to conduct three different public examinations (i.e. the HKCEE, the HKALE and the new public examination) concurrently in the third year of transition, and to conduct the HKALE and the new examination at the same time in the fourth and fifth years. This has significant resource and manpower implications. Furthermore, the different types of qualifications obtained from these public examinations may cause confusion.
- In determining the priority of schools in making the switch, objective standards acceptable to all schools must be set to avoid any possible disputes.
- In the allocation of S1 places, schools switching to the new structure in the first batch will probably be more popular. The students not allocated places in these schools and their parents may consider this unfair.
- During the transition period, tertiary institutions will have to make special arrangements in their programmes to satisfy the different learning needs of the two groups of students who have completed their senior secondary education under the old (2+2) and new (3-year) academic structures. To maximise the benefits of a longer undergraduate study under a 4-year first-degree structure, the university curriculum should not be merely the addition of one year on top of the existing 3-year programmes. A coherent curriculum must be designed for the four years as a whole. Therefore, if universities are required to provide both 3-year and 4-year programmes for an extended period during the transition, it may cause confusion in teaching, provision of facilities and administration and may require substantial additional manpower and resources.
- During the transition period, universities will admit both SS3 and S7 graduates concurrently. Unless the number of first-year intake (for the 3-year and 4-year undergraduate structures) can be increased accordingly, an intake ratio for SS3 and S7 graduates may have to be worked out.

- The longer the transition period when both the new and the old structures are in place, the greater confusion it will cause to schools, students and parents.

(b) One-off and Across-the-board Switch to the New Structure

5.5 All secondary schools will adopt SS1 curriculum for their S4 classes in the same year. This batch of students will progress to SS2 in the following year and be promoted to SS3 in the third year. The course of change is shown in the following table.

Table (2):

	1st year	2nd year	3rd year	4th year
S4/SS1	<i>80 000⁽¹⁾</i>	<i>80 000</i>	<i>80 000</i>	<i>80 000</i>
S5/SS2	80 000	80 000	80 000	80 000
S6/SS3	27 200	27 200	80 000	80 000
S7	27 200	27 200	27 200	—
Total number of senior secondary students	214 400	214 400	267 200	240 000
Year 1 of 4-year undergraduate structure	—	—	—	14 500 ⁽²⁾
Year 1 of 3-year undergraduate structure	14 500	14 500	14 500	14 500
Year 2 of 3-year undergraduate structure	14 500	14 500	14 500	14 500
Year 3 of 3-year undergraduate structure	14 500	14 500	14 500	14 500

(i) Merits

- Possible problems arising from the “switch by batches” option can be avoided.
- The HKEAA is required to conduct the HKALE and the new public examination concurrently for only one year (the third year of the transition).
- There will be a much shorter transition period when universities have to provide both 3-year and 4-year undergraduate programmes.
- All the secondary schools switch to the new structure at the same time, causing less confusion to teaching and administration, and also to students and parents.

Note ⁽¹⁾ It is assumed that the total number of students pursuing S4/SS1 is 80 000 each year, and the figures in italics denote the number of students pursuing the 3-year senior secondary education.

⁽²⁾ It is assumed that all first-degree courses of the 3-year structure will change to the 4-year structure, and the intake for the first year remains at 14 500.

(ii) Problems to be Solved

- As secondary schools have to provide both S7 classes under the old structure and SS3 classes under the new structure in the third year of the transition, about 1 500 additional teachers will have to be employed for that school year. One of the possible ways to address this is to provide the affected schools with a block vote for one year to enable them to employ temporary teachers according to their needs. They can also cope with the special needs of the transition by redistributing work among their teachers.
- Universities will be required to increase their overall intake by about one-third on a one-off basis in the same year. Therefore, problems relating to facilities, teaching staff and adjustment of programmes must be solved before implementation of the new structure.
- The question of S5 and S7 repeaters under the old structure will need to be tackled.

5.6 After weighing the pros and cons of the above two options and in order to avoid confusion and possible labelling effect to individual schools and students arising from a phased transition, we recommend the option of a one-off and across-the-board switch. This option is proposed having regard to the question of fairness to students and the practical manpower and resource problems that the HKEAA may experience if a number of public examinations are to take place concurrently. Nevertheless, we may need more preparation and planning time to ensure all supporting measures are in place.

Chapter 6: Timetable for Implementation

(I) Preliminary Assessment

6.1 In Chapter 3, we have set out the details of the pre-conditions for implementing the 3-year senior secondary academic structure. Our preliminary assessment of the time required for putting in place these pre-conditions is as follows:

(i) Reorganisation of Class Structure

6.2 To enable students to complete the whole senior secondary curriculum in the same school as far as possible, progressive reorganisation of class structure should commence at (S1) in some of the existing schools three years before the switch is due. Building a new school usually takes four to five years, including the feasibility study, site formation, construction of the school premises and ancillary facility, allocation and fitting out, etc. In other words, the planning for the construction of a new school should start seven to eight years before the change in academic structure takes place.

(ii) Development of a New Senior Secondary Curriculum

6.3 The Curriculum Development Institute (CDI) has commenced work on curriculum reform. The existing timetable for implementing the senior secondary curriculum reform is at Appendix VI. As the revised senior secondary curriculum will pave the way for the new senior secondary curriculum, the CDI has to embark on some preparatory work four to six years before the introduction of the new senior secondary curriculum, including development of the framework of the eight key learning areas of the new 3-year SS curriculum and the curriculum guides of each subject (including the learning targets, the standards and content of the curriculum). It also has to conduct public consultations and make revisions at different stages, develop new teaching resources, allow sufficient time for the relevant organisations to publish textbooks, prepare in-service teacher training programmes relating to the new curriculum, etc. Implementation of the new curriculum should take account of the progress made in the ongoing curriculum reform, including changes in the learning and teaching culture. The time actually required for developing the new SS curriculum depends on the progress of the current curriculum reform in senior secondary education and the implementation of the consequential changes to the public examinations.

(iii) Development of a New Public Examination

6.4 The HKEAA and the CDC should jointly work out the curriculum cum assessment guidelines, devise the assessment criteria, mechanism and mode of the new curriculum about four years before the switch. As the recognition of the new public examinations is of paramount importance to students' attempt to further their studies and seek employment, the HKEAA should discuss with local and overseas tertiary institutions and accrediting authorities on the recognition of the new public examinations.

(iv) Modification of Pre-service Teacher Training Programmes

6.5 The conceptual underpinnings of the current curriculum reform and the curriculum of the proposed new senior secondary academic structure are the same. Since the teacher training institutes should already be adjusting their programmes in line with the ongoing curriculum reform in order to ensure that new teachers will have the requisite knowledge, attitude and skills, theoretically speaking, the teachers training programmes need not undergo another major change prior to introduction of the new SS curriculum. Nevertheless, to meet the demand for more trained teachers for the additional schools and existing schools which need to operate more classes as a result of class structure reorganisation, teacher training institutions will need to increase their intakes when the new SS curriculum is being developed, i.e. about three years before the switch.

(v) Extension of First-degree Programmes and Adjustment of University Admission System

6.6 To tie in with the implementation of the 3-year new senior secondary academic structure, tertiary institutions are required to adjust the duration and content of their programmes as well as the admission system. Given the greater operating flexibility of tertiary institutions and the higher autonomy they enjoy, it is believed that preparation for the necessary adjustments to the first degree curriculum and the admission system would have been completed by the time the above-mentioned pre-conditions are in place.

(vi) Coordination with the Relevant Education Reform Measures

6.7 At present, a number of reform initiatives are being carried out progressively, including the reform of secondary school places allocation system, curriculum reform, reform of public examinations, Basic Competency Assessment and the expansion of post-secondary education, etc. Among these, the review of the secondary school places allocation system and of the medium of instruction policy to be carried out in the 2003/04 school year, in particular, will have the greatest impact on secondary education. The new long-term secondary school places allocation system will be implemented in the 2005/06 school year, with the first batch of students to progress to S1 in 2006. As this batch of students will be in S4 (i.e. SS1 under the new structure) in the 2009/10 school year, a more appropriate arrangement is perhaps to introduce the 3-year senior secondary structure in the 2010/11 school year so that these students need not go through two major changes during their secondary education.

6.8 The table below briefly shows the time required for the above preparations. As mentioned earlier, development of all the pre-conditions takes seven to eight years. Additionally, given the need to coordinate with other education reform measures, it is estimated that the new 3-year senior secondary academic structure could only be implemented during or after the 2010/11 school year.

School Year	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Initiatives								
Secondary School Places Allocation System	Transitional mechanism Interim review		Long-term mechanism					
Medium of Instruction Policy	Interim review		To be revised in the light of the review					
Expansion of Tertiary Education	To increase the number of tertiary places gradually, and provide 60% of senior secondary leavers with opportunities for further studies							
Reform of Existing Curriculum	First phase			Second phase				Third phase
Basic Competency Assessment	To introduce student assessment for S3 and system assessment for P3	To introduce system assessment for P6	To introduce system assessment for S3					
Reform of Existing Public Examinations	To revise the content and mode of existing public examinations to tie in with the curriculum reform							
Reorganization of Class Structure		To construct new school premises				To adjust the class structure of schools		
Development of New Senior Secondary Curriculum			To develop the syllabus and curriculum guides, conduct public consultations and make revisions					
Development of New Public Examinations					To work out the curriculum and assessment guidelines, and devise the assessment criteria, mode and mechanism			
Modification of Pre-service Teacher Training Programmes						To increase training places and modify the content of the programmes		
Adjustment to Programmes and Admission System of Universities	To adjust the programmes and admission system of universities gradually to tie in with full implementation of the new academic structure							

(II) Proposal in respect of the Implementation Timetable

6.9 Appropriate changes in learning and teaching as well as assessment culture are key to realising the merits of the new senior secondary academic structure. The cultural change is taking place gradually due to the implementation of the education reform and the curriculum reform. A new teaching mode which is student-focussed, caters for students' diverse abilities and cultivates students' sense of ownership of their learning, is already being practised in various degrees at different schools. At the same time, the HKEAA and schools have separately started to review and reform public examinations and school-based assessment respectively. The purpose is to enhance the positive effects of the assessment on learning and teaching. The HKEAA has also conducted an organisational review in response to the changes to be made on assessment. The results of that review will be implemented in the coming few years.

6.10 Separately, the reviews on Secondary School Places Allocation System and Medium of Instruction will start in the 2003/04 school year. The post-review measures will be implemented from S1 in the 2006/07 school year. These two reviews will have major impacts on student admission, curriculum design, and deployment of teachers and other resources at the secondary education level. We envisage that schools will take time to reflect and make the changes required.

6.11 Since a new senior secondary academic structure is a major systemic change, we consider that a pragmatic approach would be to prudently review the changes in the learning and teaching, as well as assessment culture, and the capacity of schools and other implementation agencies before firming up the implementation timetable. However, as the new senior secondary academic structure helps enhance the overall effectiveness of secondary education and is an important milestone in the education reform, we consider that the implementation timetable should be firming up in the near term. We consider that period between the years 2003/04 and 2006/07 can be taken as the early preparatory phase. During this time, Government should continue to take forward and consolidate the ongoing education reform measures such as curriculum reform, public examination reform and enhancement of teachers' training, etc. (Details are in immediately following session). The Government should clearly announce, in 2006/07 at the latest, when senior secondary 1 (SS1) under the new academic structure will be in place. In any circumstance, parents should be given at least 3 years prior notice of the change in academic structure.

Chapter 7 : Resource Implications

7.1 In Chapter 3, we have mentioned the pre-conditions for adopting a 3-year senior secondary academic structure, including the design of a new curriculum and public examinations, re-organising class structure and increasing secondary school places, training new and serving teachers, extending the duration of the first-degree programmes, etc. Implementation of these measures will have substantial implications on recurrent and non-recurrent expenditure. EMB and the UGC-funded institutions have, during the review, made initial assessments on the resource implications of adopting the new structure.

Assumptions

7.2 The assessment of resource implications is based on the following assumptions –

- (a) A class size of 40 students per SS3 class (as compared to 40 students per S4/S5 class and 30 per S6/S7 class at present)³ will be adopted;
- (b) The teacher to class ratio for SS1 and SS2 will be 1.3:1 (the same as for S4 and S5 at present) and 2:1 for SS3 (the same as for S6 and S7 at present). We suggest that before implementing the new senior secondary academic structure, the Government should examine the feasibility of adopting a uniform teacher to class ratio for SS1 to SS3 to ensure greater continuity of the 3-year curriculum;
- (c) No floating classes will be adopted for the new senior secondary academic structure;
- (d) The current structure will transit to the new one through one-off switch across the board;
- (e) The requirement for additional manpower in the 3rd year of the transition when S7 and SS3 are operating in parallel will be met by temporary teachers instead of employing new and additional teachers;
- (f) 95% of S3 students will progress to SS1 and complete the 3-year senior secondary programme;
- (g) The current proportion of tuition fee to the unit cost per student will remain unchanged;
- (h) The recurrent expenditure for one-year extension of first degree programmes is around 75% of one year expenditure for existing programmes;

³ There will be more choices of subjects under the new structure and we envisage that most of the subjects, other than the compulsory subjects, will be taught in groups of less than 40.

- (i) The value of land is excluded; and
- (j) The impact on publicly funded sub-degree courses has not been taken into account.

Initial Assessment of Resource Implications

7.3 Based on the above assumptions and the calculations at 2001/02 unit cost, the additional expenditure requirement for adopting the 3-year senior secondary academic structure is estimated as follows-

	Non-recurrent Expenditure (\$bn)	Recurrent Expenditure (\$bn)
Operating 34 new schools	3.1	1.4
Increasing the number of classes in some schools as a result of reorganisation of class structure	-	0.079
Developing a new curriculum and training serving teachers	0.4	0.06
Training for new teachers	0.28	-
Developing new public examinations	0.068	-
Total	3.848	1.539

7.4 On the basis of the current annual student unit cost and the facilities required, it is estimated that extending the first-degree programmes by one year will incur an additional non-recurrent expenditure of \$7.2 billion and recurrent expenditure of \$2.3 billion. Nevertheless, since the university sector has greater flexibility in managing resources, there may be room for downward adjustment of these estimates in the coming few years.

7.5 Committing spending of this magnitude over the coming few years is unrealistic in view of the Government's current fiscal constraints. If the additional expenditure is to be met entirely by increasing tuition fees, it is roughly estimated that the annual tuition fee for secondary schools will have to be raised from \$5,050(S4-S5) and \$8,750(S6-S7) to about \$16,600(SS1-SS3). Compared to the current '5+2' structure, an increase of about \$22,200 in total tuition fee will be required for the '3+3' structure. Moreover, the annual tuition fee for university first-degree programmes will have to be raised from \$42,100 at present to about \$98,700. The total tuition fee for 4-year programmes will also be increased by about \$268,500, when compared with the current fees for 3-year courses. However, under the present economic situation, it will hardly be acceptable to the community if the reform in academic structure is to be accomplished solely by increasing parents' contribution.

7.6 We recommend the Government to take the implementation of the new academic

structure as a medium term goal and strive to implement it early. To this end, while the Government should actively review and redeploy the resources required, all sectors in the community can also make suggestions on how to raise funds or reduce the additional resources required. For example, universities may actively consider switching from a 3-year to a 4-year curriculum through other means (such as soliciting donations from the private sector, redeploying existing resources and greater flexibility in programme arrangements). The education sector can also put forward ideas on resource redeployment or identification of new revenue measures.

Chapter 8: Education Reform Measures to be Taken Forward Before Switching to the New Senior Secondary Academic Structure

8.1 Despite the absence of a definite date for its implementation, the proposed new academic structure, the overall education reform and the ongoing curriculum reform share the same basic tenets. Apart from a few recommendations (for example, replacing the HKCEE and the HKALE with a new public examination), most of the proposals of the new academic structure pertain to improving the quality of education and changing the attitude to learning and teaching; and all these are consistent with the education and curriculum reform. We are delighted to note that the Government has progressively implemented the education reform initiatives including, for example reforming the secondary school curriculum and public examination system and discussing with the universities how to reform their admission system. These initiatives will not only help raise the quality of education, they also pave the way for adopting the new structure of senior secondary education. These initiatives can facilitate the adaptation by the relevant implementing agencies, secondary schools and universities to the new academic structure, so that the benefits of the new structure can be realised expeditiously when all the new conditions are in place. We therefore suggest that prior to changing the structure of senior secondary and university education, the Government and the education sector should focus on pressing ahead with the prevailing reform initiatives, in particular those in the following key areas in order to give early benefits to students and prepare for the reform of the senior secondary academic structure:

- Continued reform of secondary education curriculum : to diversify the curriculum and learning modes at the senior secondary level (i.e. above S4) to cater for students' diverse abilities and interests;
- Reforming public examinations : to design more open-ended items to encourage independent thinking and problem-solving skills;
- Enhancing teachers training : for a better coordination with the changes that will be brought about by the new curriculum and reform of the assessment mode;
- Reforming the university admission system : to take into account students' performance in both the academic and non-academic domains so as to encourage students' all-round development; and
- Adjusting the university curriculum: to strengthen the development of students' generic skills.

(i) Continued Reform of Secondary School Curriculum

8.2 The Curriculum Development Institute (CDI) has embarked on the curriculum reform since 2000, including the review of S4 to S7 curriculum under the existing academic structure. The current reform helps pave the way for future implementation of the new senior secondary curriculum. We propose the following changes to the existing SS curriculum with a view to providing more diverse choices for students:

- (a) To enhance the flexibility in the combination and choice of subjects

We propose the progressive increase in students' choice of subjects. For instance, arts students will be allowed to take science subjects according to their interests and abilities. Science students can also take arts subjects. Students can therefore have exposure to both arts and science areas. Some proposed subject combinations are as follows:

For S4 and S5

Chinese + English + Mathematics + A + B + other subjects in the eight key learning areas (KLAs) + experiential learning in other areas (e.g. sports, art, co-curricular activities, community service and job-related experiences).

“A” represents an elective subject in the KLA of Personal, Social and Humanities Education. For students who plan to take only one subject in this area, schools should advise them to choose Integrated Humanities.

“B” represents an elective subject in the KLAs of Science Education and Technology Education. For students who plan to take only one subject for both areas, schools should advise them to choose Science and Technology.

For Example:

Streaming of subjects	Chi	Eng	Math	A	B	Elective subjects in other KLAs	Total no. of elective subjects	Other learning activities
Science	✓	✓	✓	Geography + Chinese History	Physics + Chemistry + Biology + Computer and Information Technology	--	9	✓
Science	✓	✓	✓	Integrated Humanities	Physics + Chemistry + Biology and/ or Computer and Information Technology	--	7 or 8	✓
Arts	✓	✓	✓	Geography + Chinese History	Home Economics + Biology	Art and Design	8	✓
Arts	✓	✓	✓	Geography + Chinese History + Economics	Science and Technology	--	7	✓

Streaming of subjects	Chi	Eng	Math	A	B	Elective subjects in other KLAs	Total no. of elective subjects	Other learning activities
Technical	✓	✓	✓	Integrated Humanities	Engineering Science + Technological Studies and/ or Computer and Information Technology	--	6 or 7	✓
Commercial	✓	✓	✓	Integrated Humanities	Principles of Accounts + Word Processing and Business Communication (English) and/ or Commerce	--	6 or 7	✓
Others	✓	✓	✓	Integrated Humanities	Science and Technology	Physical Education and/ or Music	6 or 7	✓

To promote students' exposure to both arts and science through taking subjects from both the areas of "A" and "B", schools should, in their admission of S6 students, give priority to those who have taken subjects in these two areas in S4 and S5, in addition to considering their HKCEE results.

For S6 and S7

- Use of English at AS Level +
- Chinese Language and Culture at AS Level +
- Liberal Studies at AS Level (one specified module[#] and one project) or one independent "project" +
- One A-Level subject + one AS Level subject or two A-Level subjects (students may take more, or less, elective subjects according to their abilities) +
- Other learning activities (e.g. sports, art, co-curricular activities, community service and job-related experiences)

([#] Schools should advise students to take modules which are different from or complementary to the disciplines that they have chosen, e.g. Science students may take Today's China, whereas Arts students may take Science, Technology and Social Studies so as to widen their knowledge base, enhance their ability to integrate, analyse and apply knowledge in real life.)

(b) Revising and Improving Subjects Now Offered at Senior Secondary Level

- The development of a new senior secondary curriculum should be preceded by a review, revision and improvement of the subjects currently offered at senior secondary level. Hence, the present or soon-to-be-revised design and structure of the S4-S5 and S6-S7 curricula should facilitate the development of the new senior secondary curriculum, e.g. extending the curriculum of some S4/S5 subjects or merging, where appropriate, related subjects at the S4/S5 and S6/S7 levels.
- To cater for the diverse abilities, interests and needs of students and to provide them with more learning options, core and extended parts/modules should be developed when revising or enhancing the curriculum of certain subjects. The purpose is to provide a diversified academic or job-related curriculum.

(c) Modifying the Learning and Teaching Strategies

Schools and teachers are advised to enhance their learning and teaching strategies in respect of the following:

- To implement flexibly the four key tasks of Moral and Civic Education, Project Learning, IT for Interactive Learning and Reading to Learn, so as to improve students' abilities to construct knowledge, and enhance their generic skills, and develop proper values and attitudes;
- To develop students' thinking ability through effective questioning;
- To enrich students' learning experience through life-wide learning and project learning;
- To promote self-regulated learning mode and pace through the use of students' learning portfolios. The purpose is to develop students into active and independent learners;
- To review and adjust the various roles of a teacher such as an instructor, learning facilitator, information provider, counsellor and assessor; and
- To cater for the different learning needs of students through the development of diversified learning materials, including web-based resources, IT software, the media and natural resources.

(d) Organising Courses with Other Institutions

We propose that schools should strengthen their co-operation with other education and training providers (such as the Vocational Training Council) in order to provide courses of different nature and focuses for senior secondary students. In addition, the adoption of appropriate teaching methods would help students develop an interest, confidence and ability for continuing education, as well as obtaining recognized qualifications for further studies or

employment.

(e) Adopting a Diversified Mode of Assessment

We recommend that schools and teachers should adopt the various modes of assessment detailed in paragraph 4.1.11 in Chapter Four as soon as possible to tie in with the various learning objectives and processes advocated by the education reform and provide students with more comprehensive feedback to enable more effective learning.

(ii) Reform in Public Examinations

8.3 The reform in public examinations should integrate well with the curriculum reform. We propose to reform the public examinations gradually in the following aspects.

(a) To increase the proportion of open-ended items

We propose that the HKEAA should increase the proportion of open-ended items in existing public examinations. The aim is to provide candidates with more room for independent thinking and expression of individual views. Learning by rote will also be reduced as a result. So long as the answers are relevant and reasonable, marks should be given even if they do not feature in the marking scheme.

(b) To emphasise the assessment of students high-order thinking

Public examination items should be so designed that they focus on assessing generic skills, high-order thinking and integrative abilities of students. Relevance of the items to real life situations should be enhanced in order to assess students' ability to solve problems and apply knowledge.

(c) To improve the grading mechanism

As mentioned in paragraph 4.2.4 in Chapter Four, the existing grading mechanism of public examinations falls short of meeting the current expectations of our community. With a view to improving the grading mechanism, the HKEAA is now drawing reference from overseas experience and studying the feasibility of adopting the standard-referencing approach in local public examinations. On establishing its feasibility, the standard-referencing approach can be implemented progressively without the need to await the implementation of the new senior secondary academic structure.

(d) To consider the introduction of school-based assessment

The introduction of school-based assessment is being considered for individual subjects in public examinations. School-based assessment may cover students' performance:

- during the learning process;
 - in independent research, project learning, experiments or assignments.
- (e) To develop joint curriculum and assessment guide

As mentioned in the *Reform Proposals for the Education System in Hong Kong* issued by the Education Commission in 2000, assessment is part of curriculum. Assessment helps teachers and parents understand students' learning progress and needs, as well as their strengths and weaknesses. It thus provides useful reference for the design of curriculum, teaching methods and special remedial materials. Therefore, the CDC and the HKEAA will step up their cooperation in the development of joint curriculum and assessment guide for the new subjects under the present academic structure of senior secondary education. The purpose is to enhance students' learning effectiveness through enhancing the interface between the secondary school curriculum and public examinations.

(iii) Enhancing Teachers Training

8.4 As mentioned in items (i) and (ii) above, the secondary school curriculum and existing public examinations will be reformed progressively before the implementation of the new senior secondary academic structure. The teachers training institutes will need to adjust their programme contents progressively in close consultation with the CDI, the HKEAA and other related organisations so as to facilitate teachers' acquisition of the knowledge and skills required for adapting to the new senior secondary curriculum, e.g. an enhanced ability to teach cross-curricular programmes (e.g. Liberal Studies) and an understanding of the diversified modes of assessment. So adjusting the existing teachers training programmes not only supports the education reform, it will also obviate the need for another major adjustment when the time comes for adopting the new senior secondary curriculum.

(iv) Reform of the University Admission System

8.5. We would like to call on local universities to positively examine and implement, even before the change in the academic structure of university education, the following improvements to the admission system with a view to encouraging students' whole-person development.

- (a) Consider the overall performance of the students
In addition to public examination results, universities should also consider the following :
- (1) secondary schools' internal assessment reports (including students' performance in both the academic and non-academic domains);
 - (2) student learning portfolio; and
 - (3) performance at interviews, etc.
- (b) Give due emphasis on students' breadth of knowledge
In respect of the requirements on subjects taken by students in secondary

schools, we recommend that universities should consider the following reform proposals:

- (1) give priority to those students who have taken AS Liberal Studies, as this subject can help students broaden their knowledge base and develop essential generic skills;
 - (2) replace as far as possible A Level subjects with AS Level subjects in university admission requirements, thus emphasising the importance of a broad knowledge base; relaxing the subjects required to be taken at the secondary level so as to provide students with more room to choose subjects of different learning areas during their secondary education;
- (c) **Set up a data bank of schools' internal assessment**
A data bank of schools' internal assessment (covering both the academic and non-academic performance) of students applying for admission to universities should be established under the Joint University Programmes Admissions System (JUPAS) for reference by the universities;
- (d) **Multi-channel admission**
Increase the proportion of students admitted through channels other than the JUPAS, including:
- (1) the Principals' Recommendation Scheme;
 - (2) the Students' Self-recommendation Scheme; and
 - (3) admission on the basis of recognized qualifications/ certification other than the HKCEE and HKALE (for example, the International Baccalaureate, the GCE A-Level and other recognized qualifications granted by international examination bodies, as well as sub-degree).
- (e) **Increase the transparency of universities' admission criteria**
Increase the transparency of the admission system so that students, parents and secondary school principals and teachers can have a better understanding of admission criteria other than public examination results, including considerations such as students' aptitude, values and attitudes as well as inter-personal and other skills as reflected through their participation in community service, non-academic activities and interviews.

(v) Adjustment of University Curriculum

8.6. We recommend that universities should maintain close contact and communication with the CDC so that they can keep abreast of the progress of the reform of secondary curriculum and gradually adjust the breadth of content of first degree programmes with a view to ensuring a smooth interface between secondary and university curricula. Prior to implementation of the new structure, adjustments to the university curriculum can be made in the following areas:

(a) Further Consolidation of Students' Generic Skills

Generic skills in areas such as collaboration, communication, creativity, critical thinking, information technology, numeracy, problem-solving, self-management and project research should be further cultivated at the universities. Emphasis should also be placed on enhancing students' language proficiency and inter-personal skills. With a view to helping students equip for the challenges of the 21st century, students should also be encouraged to become active learners who enjoy learning.

(b) Enhancement of Liberal Education

Students should be given exposure to learning domains other than areas that they major in so as to broaden their horizon and learning experiences as well as to widen their knowledge base.

Chapter 9: Conclusion

9.1 A 3-year senior secondary academic structure should help provide more room for a more coherent and diversified secondary school curriculum, and this will in turn facilitate the attainment of the overall objectives of the education reform. That said, securing all the pre-conditions is a pre-requisite to realizing the benefits of the new academic structure. These pre-conditions pertain to the design of the new curriculum, development of new public examinations, adjustment to university curriculum and admission system, readiness of schools and teachers, as well as the need to construct additional facilities for the secondary and university sectors.

9.2 It is estimated that these pre-conditions will take 7 to 8 years to develop. On the other hand, the HKEAA, the CDI and other concerned implementation agencies are currently carrying out with full strength the education and curriculum reforms. Any new reform should take account of their capacity in order to ensure effective implementation. In addition, the implementation of the new structure would require significant additional resources. Part of the expenditure, such as that for constructing new schools and developing the new curriculum, would need to be incurred at the initial preparatory stage.

9.3 In view of the Government's present fiscal stringency and the aforementioned capacity consideration, we consider that the period between the years 2003/04 and 2006/07 can be taken as the early preparatory phase. During this time, Government should continue to take forward and consolidate the ongoing education reform such as the curriculum reform, public examination reform and enhancement of teachers' training, etc. The Government should clearly announce, in 2006/07 the latest, when SS1 under the new academic structure will be in place. In any circumstances, parents should be informed at least 3 years prior to the commencement year of SS1. We also encourage the education sector and other interested parties in the community to make proposals on how to raise funds or reduce the additional resources required for implementing the proposed new academic structure.