

Introducing the Hong Kong Diploma of Secondary Education Examination

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Abstract

A new academic structure will be implemented in Hong Kong in 2009. After completing a three-year junior secondary curriculum, all students will continue to study a three-year senior secondary curriculum. The new senior secondary academic structure allows all students with the opportunity to receive six years of secondary education to promote life-long learning and to meet the changing needs of Hong Kong. A new Hong Kong Diploma of Secondary Education Examination (HKDSE) will be implemented in 2012 to replace the existing public examinations, the Hong Kong Certificate of Education Examination (HKCEE) and the Hong Kong Advanced Level Examination (HKALE).

The paper will outline three special features of the new examination, namely, the use of standards-referenced reporting (SRR), the introduction of school-based assessment (SBA) and the provision of assessment to candidates with a wide ability range. In adopting the SRR system, the standards of the new examination are set with reference to the current standards in the HKALE. SBA is introduced to enhance the validity of the examination. It aims to assess learning outcomes which cannot be assessed through public examinations. A variety of arrangements will be practiced in the HKDSE examination to cater for the needs of students of a wide ability range.

The paper will conclude with a communication schedule with different stakeholders, covering issues related to international benchmarking of standards and setting threshold requirements for employment and further education purposes.

Introduction

Starting September 2009, the new senior secondary academic structure will be implemented in Hong Kong. More than 500 secondary schools in the territory will be offering the three-year curriculum comprising 4 core subjects and 20 elective subjects, together with increased exposure to other learning experiences in moral, physical and aesthetic areas. This paper gives a brief outline of the new academic structure, the features of the new examination and the communication with stakeholders.

The academic structure in Hong Kong

In Hong Kong, children normally enter primary school at age six. After completing six years of primary education, they transfer to secondary schools. The current structure of secondary education in Hong Kong provides five years of secondary education from Secondary 1 to Secondary 5, which almost all students complete. From Secondary 4 to Secondary 5, students follow the two-year courses at the end of which they sit for the Hong Kong Certificate of Education Examination (HKCEE), which is the first high-stakes public examination taken by

students after 6 years of primary education and 5 years of secondary education. HKCEE students who meet the prescribed qualifications may proceed to sixth form to study the two-year courses, from Secondary 6 to Secondary 7 at the end of which they take the Hong Kong Advanced Level Examination (HKALE) for university admission purposes. The current government policy is to provide sixth form education to a third of the corresponding Secondary cohort in the public sector.

The new academic structure

Following a series of policy decisions dating back to 2000 and extensive public consultations from 2004 to 2006, agreement has been reached to change to a new 3+3+4 academic structure in which all students will be expected to complete three years of junior secondary education, followed by 3 years of senior secondary education. A proportion will then proceed to four-year undergraduate degree programs in universities. Both the old and the new academic structures are shown diagrammatically in Figure 1.

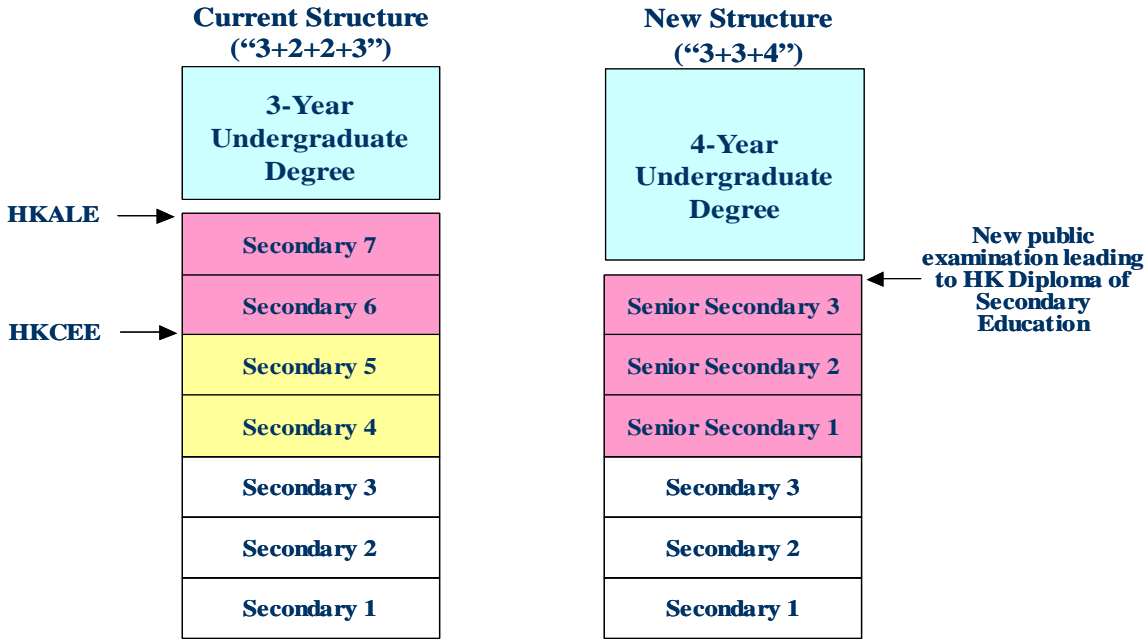


Figure 1. The current and new academic structures in Hong Kong

The main impact of the change to the academic structure is that *all* students will be expected to remain at school until the end of their sixth year of secondary education, when there will be a single baccalaureate-style examination, to be known as the Hong Kong Diploma of Secondary Education (HKDSE). This will replace the current two examinations that are currently taken, HKCEE at the end of the fifth year of secondary education by almost all students and HKALE at the seventh year by about a third of the cohort. This new assessment structure will be implemented on a timeline that will see the first cohort of students taking the new Hong Kong Diploma of School Education (HKDSE) public examination in 2012. The main features of the new system are as follows:

- Using a standards-referenced approach to report results
- Implementation of SBA over a wide range of subjects
- Special measures to cater for the needs of students over a wide ability range

The subjects in HKDSE

In developing the curriculum for the new academic structure, the opportunity has been taken to rationalize the number of subjects on offer and to eliminate current overlaps and redundancies. Under the new HKDSE, all students will take four core subjects, namely:

- Chinese Language
- English Language
- Mathematics
- Liberal Studies

In addition, students will choose two to three elective subjects from the other twenty subjects. These are:

Biology
Business, Accounting & Financial Studies
Chemistry
Chinese History
Chinese Literature
Design & Applied Technology
Economics
Ethics & Religious Studies
Geography
Health Management & Social Care
History
Information & Communication Technology
Literature in English
Music
Physical Education
Physics
Science
Technology & Living
Tourism & Hospitality Studies
Visual Arts

The core plus electives curriculum framework is intended to ensure that all students receive a broad and balanced education that nonetheless provides opportunities for specialization and choice.

The examination in the four core subjects

It is important to design comprehensive assessment schemes for the different subjects in the HKDSE. Comprehensiveness in assessment entails the selection of a range of assessment processes designed to provide a variety of evidence for assessing the performance of students (National Research Council, 2001). The assessment schemes in the four core subjects are explained below.

In the two language subjects, students will be assessed on the four basic language skills: reading, writing, listening and speaking. For each language subject, there will be a listening test as well as a speaking test. There will also be a school-based assessment (SBA) for each

language subject. For English Language, the SBA component will focus on the assessment of speaking skills, while for Chinese Language, the SBA component will focus on the assessment of integrated language skills.

In the subject of mathematics, there are two parts: the compulsory part and the extended part. While all students are expected to take the compulsory part, the extended part is offered to students on an optional basis. It is meant for students who want to take up mathematics / science studies in the university. There are two optional modules: Calculus & Statistics and Algebra & Calculus. Students are given the freedom to take or not to take these additional modules. The results in the elective part will be reported separately.

The subject of Liberal Studies is introduced as a core subject to broaden students' knowledge base and enhance their social, national and global awareness, as well as develop their multi-perspective and critical thinking skills through a wide range of issues. In addition to two written papers, students have to complete an independent enquiry study within the last two years of the senior secondary education. The independent enquiry study is assessed by students' own teachers and accounts for 20% of the total subject result.

The learning outcomes of the 24 HKDSE subjects are detailed in the Curriculum and Assessment Guides and are available at the following website:

http://www.hkeaa.edu.hk/en/hkdse/Subject_Information/

The assessment frameworks of the 24 HKDSE subjects are detailed in the publication Regulations and Assessment frameworks and are available at the following website:

http://www.hkeaa.edu.hk/en/HKDSE/Subject_Information/gen_info/framework_final/

Standards-referenced reporting

In the HKDSE, the reporting system will be different from that adopted in HKCEE and HKALE. At present, for non-language subjects in HKCEE and for all subjects in HKALE, performance of candidates is reported in six grades (A to F), with A being the highest. Performance below Grade F will be labeled as "Unclassified".

A standards-referenced reporting (SRR) system will be used in reporting student results in the HKDSE examination. Instead of using grades A to F as in the current reporting system, there are five levels of performance in the new system, namely Level 1 to Level 5, with Level 1 being the lowest and Level 5 being the highest. In this new reporting system, students' results will be reported with reference to a set of defined levels or standards of performance. The reason for having levels rather than grades is to avoid confusion between the old and the new systems of reporting results. To annotate the best performers among the Level 5 students, 5* and 5** will be used. SRR is a new reporting format. There is no direct equivalence between the levels and grades in the new and old reporting systems.

Under SRR, the standards are held constant and there is no fixed proportion of students for each level. The proportion of students awarded a given level depends on the proportion of the students meeting the defined standard. This means that it is possible to know how standards are changing over time with the new reporting system.

The prescribed standards of performance are defined by descriptors which are developed by a

team of subject experts, experienced markers and teachers. They evaluate and analyze student performance in pilot tests and in previous examinations during the development. Samples of student work will also be used to illustrate the standards expected of students. These samples, when used together with the level descriptors, will be able to illustrate the standards expected at the various levels of performance. These standards are transparent and are made known to both students and teachers.

The new system of reporting has the following advantages:

- (a) It ensures a close association between the assessments and the learning outcomes of the curriculum.
- (b) It reports students' results against a hierarchy of described levels of performance based on the typical performances of students. In this way, there will be a clearer and more informative report of student performance. Teachers and students will have a better understanding of the standards of performance so that appropriate goals for learning and teaching could be set.
- (c) Explicit standards facilitate learning and teaching. Students can be shown what they have to do to be awarded higher levels and teachers know what they have to do to assist students to get better results. Explicit standards are also useful to employers and tertiary institutions in making selection decisions.
- (d) This system is in line with international practice. It provides the assessment results which are reported against standards internationally recognized.

To sum up, standards-referenced reporting is designed to provide results which are closely associated with the learning outcomes of the curriculum and to report student results against a hierarchy of described levels of achievement based on the typical performances of students at that level. The key benefit is that teachers and students will have a better understanding of the standards of performance and can set goals for learning and teaching.

School-based assessment

School-based assessment (SBA) refers to assessments administered in schools and marked by students' own teachers. The primary rationale for SBA is to enhance the validity of the overall assessment and extend it to include a variety of learning outcomes that cannot be assessed readily through public examinations.

After extensive consultation with schools and teachers, it was agreed that SBA will be implemented in HKDSE. SBA will be implemented in 12 subjects in 2012. These subjects are: Chinese Language, English Language, Liberal Studies, Biology, Chemistry, Information & Communication Technology, Physics, Science, Chinese History, History, Design & Applied Technology and Visual Arts.

For these 12 subjects, SBA typically involves students in activities such as making oral presentations, developing a portfolio of work, undertaking fieldwork, carrying out an investigation, doing laboratory work or completing a design project etc. These learning activities help students to acquire important skills, knowledge or work habits that cannot readily be assessed or promoted through paper and pencil tests. For example, as explained earlier, the SBA component for English Language will cover the assessment of speaking skills while that for Liberal Studies will cover the assessment of the independent enquiry study. The

weighting of the SBA component is normally around 15%-20% of the total subject mark.

For the other subjects, implementation of SBA will be deferred until 2014 to 2016. There is no time line for the implementation of SBA in mathematics for the time being. A review of the HKDSE will be conducted in the 2012-2013 school year with the aim to further improving the design of the HKDSE examination.

The SBA scores submitted to the HKEAA by teachers will be moderated before they are used in the calculation of the final subject scores. The main reason for having moderation is to ensure the fairness of SBA. Teachers know their students well and thus are best placed to judge their performance. In consultation with their colleagues, they can reliably judge the performance of all students within the school in a given subject. However, they are not necessarily aware of the standards of performance across all schools. Despite training in carrying out SBA, and even given that teachers will assess students on the same tasks and using the same assessment criteria, teachers in one school may be harsher or more lenient in their judgements than teachers in other schools. There may also be variations in the awarded mark ranges. To address these potential problems, it is necessary to make use of various methods for moderating the scores submitted by different schools with an aim to ensuring the comparability of SBA scores across schools. Two methods will be adopted by the HKEAA: statistical moderation and moderation by expert judgement. After the examination, HKEAA will also send moderation reports to schools for their reference. The reports will specify the extent of adjustment made to the marks submitted by schools.

To ensure the smooth administration of SBA in schools, the following resources and support are provided to teachers to enable them to conduct the assessment in an effective and efficient manner:

- (a) Detailed guidance in the form of a subject handbook on how to conduct the assessments
- (b) Detailed assessment criteria and exemplars to illustrate performance standards
- (c) Professional development programmes for individual subjects to enhance teachers' understanding about SBA
- (d) A system of district co-ordinators to support teachers
- (e) An online system to store and submit SBA marks

The strategic implementation timetable for SBA and the above support measures will enable schools administrators and teachers to familiarize themselves with the assessment requirements and facilitate the smooth implementation of SBA in the HKDSE.

Catering for the needs of students of varying abilities

In designing an assessment system, there is always a need to cater for the abilities of a wide range of students. Some students might be slow learners and find the subject matter difficult at the beginning. They need more time to study the relevant subject matter. Addressing the needs of these students is important, as the whole cohort of students will go up to Senior Secondary 3. It is essential in the design of the assessment system to cater for the needs of the whole ability range of students. As Dewey (1916) remarks, "A progressive society counts individual variations as precious since it finds in them the means of its own growth".

Different subjects would utilize different strategies. The method of designing a tailored

curriculum is used in the subject of mathematics and science subjects. A prescribed proportion of the syllabus is designated as belonging to the foundation part and this part of the syllabus is examined in separate sections of the examination papers of the subject. This is done in such a way as to enable the teachers of less able students to give priority to the foundation part and by this means to increase the likelihood of their students gaining a better result.

Those supporting it clearly believe that if the less able students could concentrate on the more basic parts of the syllabus and are thus able to spend more time covering fewer topics, then they would in the end accomplish more and perform at a higher level in the examination. By placing the foundation topics in a clearly defined section in the examination papers, teachers and students would then become confident enough to place the rest of the syllabus in a category “we will tackle it if we have time”.

Thus in the examination, each paper consists of two sections. The first section consists of questions on the foundation part and the second section consists of questions on the whole syllabus. The topics covered in the foundation part do not include those that are regarded as being conceptually more difficult, i.e. pragmatically, those which are the more difficult to teach. This can be illustrated with the following example of learning trigonometry in the HKDSE Mathematics syllabus.

Learning Unit	Learning Objective	Time	Remarks
13. More about trigonometry	13.1 understand the functions sine, cosine and tangent, and their graphs and properties, including maximum and minimum values and periodicity	21	Simplification of expressions involving sine, cosine and tangent of $-\theta$, $90^\circ \pm \theta$, $180^\circ \pm \theta$, ... , etc. is required Equations that can be transformed into quadratic equations are required only in the Non-foundation Topics and tackled in Learning Objective 5.3.
	13.2 solve the trigonometric equations $a \sin \theta = b$, $a \cos \theta = b$, $a \tan \theta = b$ (solutions in the interval from 0° to 360°) <u>and other trigonometric equations (solutions in the interval from 0° to 360°)</u>		
	13.3 <u>understand the formula $\frac{1}{2}ab \sin C$ for areas of triangles</u>		
	13.4 <u>understand the sine and cosine formulae</u>		
	13.5 <u>understand Heron's formula</u>		

(Non-foundation topics are underlined)

Figure 2. An example of the syllabus in HKDSE Mathematics

Thus in the learning of trigonometry, solving trigonometric equations with solutions in the

interval from 0° to 360° would not be required in the foundation part.

Another method employed is the differential paper approach adopted in the subject of English Language. In the reading and listening papers, there will be three sections. All students must do Section 1 and then choose either Section 2, the easier section, or Section 3, the most difficult section. Students attempting Sections 1 and 3 will be able to attain the full range of possible levels, while Level 4 will be the highest level attainable by students attempting Sections 1 and 2.

In the science subjects, some students may not like to take the whole subject of Biology or Chemistry or Physics. Flexibility is built in the system so that students may take a science subject by taking the foundation parts in two of the subjects in Biology, Chemistry and Physics. Thus three combinations are available:

- Combined science in Biology and Chemistry
- Combined science in Biology and Physics
- Combined science in Chemistry and Physics

In short, a good assessment system needs to address two functions:

- (a) providing information about student performance to facilitate selection for employment and further studies;
- (b) serving as a measure of student attainment, indicating the levels of performance of students in their studies.

It is believed that the measures above will help to address the issues and cater for the needs of the wide student population.

Communication with stakeholders

In moving to a new system, apart from the design of learning materials, it is also essential to communicate the new system to other stakeholders, including local tertiary institutions, overseas education bodies and employer associations.

To ensure that stakeholders have confidence in the new award, it is important to communicate to them the standards of the new examination. In the first instance, stakeholders need an assurance about the new standards of the examination.

The standards

In developing standards for the HKDSE, it is essential to maintain a continuity of standards from the old system to the new system at certain key points. At the higher end, it is proposed that the HKDSE standards be benchmarked at the standards of performance typically exhibited by candidates obtaining various grades in the HKALE. This is important for tertiary selection purposes.

In Chapter 5 of all subject Curriculum and Assessment Guides, the following is documented:

In setting standards for the HKDSE, levels 4 and 5 will be set with reference to the standards achieved by students awarded grades A-D in the current HKALE. It needs to be stressed, however, that the intention is that the standards will remain constant over time – not the percentages awarded different levels, as these are free to vary in line with variations in overall performance. Referencing levels 4 and 5 to the standards associated with the old grades A-D is important for ensuring a degree of continuity with past practice, for facilitating tertiary selection and for maintaining international recognition.

In the development of sample papers and level descriptors, subject committees are given the understanding that some of the questions should carry an intellectual rigor at A level. When they draw up the standards at Levels 4 and 5, they have made reference to

- (a) the scripts at grades A-D at HKALE
- (b) the percentage awards for HKALE for that subject

This does not mean that there will be a conversion table between the old grading system and the new reporting system. However, an explanation about how new standards are being set is of vital importance in securing public confidence.

Communication with tertiary institutions

It is important to explain to tertiary institutions the standards of the new examination. In Hong Kong, tertiary institutions have made known to the public the minimum entry requirements for applicants using the HKDSE results:

Subject	Minimum Level required
Chinese Language	3
English Language	3
Liberal Studies	2
Mathematics	2

Figure 3. Minimum entry requirements set by local tertiary institutions

It must be pointed out that the minimum levels of achievement do not mean that students with these results will be admitted to studies in universities. Applications to studies in various degree programmes are still processed on a competitive basis according to the achievements of the candidates.

Equally important is it to explain the standards of the HKDSE to international universities. For this reason, the HKEAA has approached a number of international examination bodies to conduct benchmarking studies so as to enable local students to use HKDSE results to apply studying overseas.

Communication with employer associations

The HKEAA is also actively communicating regularly with employers, mainly on their broad understanding of what students would learn and achieve, how the new standards in the HKDSE might be interpreted, and the connections with other qualifications so as to facilitate

their consideration and revision of relevant job entry requirements. It is important for the HKEAA to work with the Education Bureau (EDB) on this issue. EDB has set up a process to discuss with the HKEAA and the Civil Service Bureau (CSB) on benchmarking / drawing comparability of HKDSE qualifications with the entry qualifications requirements of civil service grades that are set under the current public examination system. It is expected that the detailed arrangements will be announced in 2010. The acceptance arrangements of the HKDSE qualifications as entry qualifications requirements for civil service appointment could serve as a useful reference for other employers in considering the acceptance of the new HKDSE qualification.

The way forward

At present, the basic infrastructure of the examination has been set up. The Curriculum and Assessment Guides were completed in 2007. The standards-referenced reporting materials for individual subjects, including sample papers, marking schemes, level descriptors and exemplar materials were completed in 2008 and the examination regulations were promulgated in 2009. However, given the complexity of the changes, while relevant parties are striving hard to ensure smooth implementation, it is expected that new concerns would emerge from time to time. Appropriate and effective communication channels will be set up to solicit feedback from relevant parties and the HKEAA will continue to work with in partnership with stakeholders to ensure a smooth implementation of the new examination.

References

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