

## **The Hong Kong Diploma of Secondary Education Examination – Challenges and Prospects**

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### **Abstract**

*Following the implementation of the new Academic Structure in 2009, Hong Kong now provides twelve years of free primary and secondary education, i.e. six-year primary plus three-year junior secondary and three-year senior secondary education. The Hong Kong Diploma of Secondary Education (HKDSE) Examination is taken at the end of Senior Secondary Education (Secondary 6/Year 12). Students normally take the four core subjects (Chinese Language, English Language, Mathematics and Liberal Studies) with two to three elective subjects.*

*The first HKDSE Examination was administered in 2012. There are three special features of the HKDSE 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 explained with level descriptors and exemplars. SBA is introduced to enhance the validity of the examination. It aims to assess learning outcomes which cannot be assessed through public examinations. Different tiering arrangements have been adopted in the HKDSE examination to cater for the needs of students of a wide ability range. The paper describes the problems encountered in the implementation of the new examination and makes suggestions for the way forward to face these challenges.*

### **Keywords**

Public examinations, school-based assessment, standards-referencing reporting

## **Introduction**

A new academic structure was implemented in Hong Kong in 2009. After completing a three-year junior secondary curriculum, all students can 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) has been designed to replace the existing public examinations, the Hong Kong Certificate of Education examination (HKCEE) and the Hong Kong Advanced Level examination (HKALE). The first HKDSE Examination was held in summer 2012. The year 2012 was indeed a landmark year in the history of education in Hong Kong, when the first cohort of students completed the new senior secondary education under the new academic structure, and proceeded, through multiple pathways, to further studies, training and employment.

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, known as the Hong Kong Diploma of Secondary Education (HKDSE) Examination. The main functions of the new system are as follows:

- To provide certification to students showing achievement in different subjects
- To provide an instrument for selection to further studies.

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.

### **The new senior secondary curriculum**

In the new curriculum, students take four core subjects: Chinese Language, English Language, Mathematics and Liberal Studies. Apart from the four basic core subjects, students can choose two to three elective subjects. They can make the choices from three categories of subjects. Category A refers to the subjects in the new senior curriculum. The four core subjects also come from this category. Student performance is graded in five levels, from level 1 to level 5, level 5 being the highest level. Category B refers to the Applied Learning subjects. These subjects aim to provide exposure for students to practical and vocational experience. Student performance is graded in “attained” or “attained with distinction”. Category C subjects refer to the other language subjects (e.g. French and Japanese) which are set and marked and graded by Cambridge International Examinations. Student performance will be graded in five grades, from grade e to grade a, grade a being the highest grade. 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 HKDSE Examination in 2012**

The success of a new qualification rests on how the results are accepted by stakeholders. As far as the use of examination results is concerned, two thresholds of performance are of special importance. The first one is related to the admission to the sub-degree programs. The criterion for admission to sub-degree programs is five subjects with level 2 or above,

including Chinese Language and English Language. The second one is related to the admission to undergraduate degree programs in local universities. Applicants have to obtain level 3 or above in both Chinese Language and English Language, and level 2 or above in Mathematics and Liberal Studies before they can be considered for admission.

The total number of candidates who entered the first HKDSE Examination was 73,074, of which 98% were school candidates presented by 532 schools. Of these, 26,515 day school candidates have met the general entrance requirements for local four-year undergraduate university programmes, obtaining level 3 or above in both Chinese Language and English Language, and level 2 or above in Mathematics Compulsory Part and Liberal studies. This represents 38% of the day school candidature. A total of 47,853 day school candidates obtained level 2 or above in five subjects, including Chinese Language and English Language. These candidates are eligible to apply for sub-degree courses and civil service appointments. This covers 69% of the day school candidature

### **Progress to multiple pathways**

Stakeholders are in general satisfied with the examination results. Students are able to use the results for application in study programs and employment. Admission officers are able to make admission offers to applicants based on the examination results. Government officials are able to provide multiple pathways for students based on the examination results.

Around 80% of the 47,853 day school candidates who qualified for local undergraduate and sub-degree study in 2012 actually enrolled in such courses within Hong Kong. Many of the remaining 20% who achieved these grades, as well as other candidates, opted to study outside Hong Kong. A total of 23%, or 16,507 of day school candidates were admitted to bachelor level studies in UGC funded or self-financing programmes in Hong Kong. According to a survey conducted by the Education Bureau in 2012, around 88% of the candidates continued to further studies locally or outside Hong Kong. Table 1 shows the pathways taken for the first HKDSE Examination candidates.

**Table 1. Multiple pathways for the first HKDSE Examination candidates**

<b>Category</b>	<b>Percentage</b>
Further studies in Hong Kong	81
Further studies outside Hong Kong	7
Full time employment	8
Undecided	4

There are three special features in the HKDSE Examination: the introduction of standards-referenced reporting (SRR), the use of school based assessment (SBA) and making allowance for the varying abilities of candidates.

### **Standards-referenced reporting**

A standards-referenced reporting (SRR) system has been used in reporting student results in the HKDSE Examination. Instead of using grades A to F as in the old 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. The prescribed standards of performance are defined by descriptors which are developed by a team of subject experts, experienced

markers and teachers. Samples of student work are also provided to illustrate the standards expected of students. These samples, when used together with the level descriptors, are used to illustrate the standards expected at the various levels of performance. Level descriptors are important reference sources for subject experts to make judgments on grading. They also facilitate tertiary institutions and employers to set appropriate admission and job requirements.

Recognition in the international sector is very important in the promotion of a new public examination. In the past, overseas universities are very familiar with the HKCEE and the HKALE standards. However, the HKDSE Examination results are totally new to them. In order to promulgate the standards of the new examination, there is the need to conduct benchmarking studies with other agencies to establish links with other awards. A study was conducted in collaboration with the Universities and Colleges Admissions Service (UCAS) in the UK to benchmark the standard of HKDSE with the GCE A level. With the completion of the study, the HKDSE has been included in the UCAS tariff. The inclusion of the HKDSE in the UCAS Tariff has allowed comparison of standards between the HKDSE and other international qualifications to be made, such as AP, IB and hence facilitated the application for admission to overseas universities. The tariff points awarded are shown in Table 2.

**Table 2. UCAS Tariff points to Category A NSS subjects**

Level	Tariff	Remarks
5**	145	Slightly higher than grade A* in GCE A level examination
5*	130	Between grades A and A* in GCE A level examination
5	120	Comparable to grade A in GCE A level examination
4	80	Comparable to grade C in GCE A level examination
3	40	Comparable to grade E in GCE A level examination

[Details of the UCAS benchmarking study of HKDSE can be found at:  
[www.hkeaa.edu.hk/en/IR/Standards\\_of\\_HKEAA\\_qualifications/UCAS\\_2012/index.html](http://www.hkeaa.edu.hk/en/IR/Standards_of_HKEAA_qualifications/UCAS_2012/index.html)]

The HKEAA also conducted a benchmarking study in 2012 to compare the standards between the International English Language Testing System (IELTS) and the HKDSE English Language Examination. Results of the study are as follows:

**Table 3. Comparison of standards between the IELTS and the HKDSE English Language Examination**

2012 HKDSE English Language Subject Level	Overall IELTS Band Score
	Equivalent range
5**	7.51 – 7.77
5*	7.16 – 7.32
5	6.81 – 6.99
4	6.31 – 6.51
3	5.48 – 5.68
2	4.79 – 5.07

The benchmarking study provides useful information for overseas universities to understand the English proficiency of HKDSE candidates and to set their admission requirements accordingly. It is worth noting that the ranges shown do not stand for the highest and lowest attainment levels of the students participating in the study. It is an estimate of the ranges of scores that would be obtained by students who have obtained different levels of achievement in the HKDSE English Language Examination.

[Details of the IELTS benchmarking study and FAQs can be found at:

[http://www.hkeaa.edu.hk/en/IR/Standards\\_of\\_HKEAA\\_qualifications/IELTS\\_2012/index.html](http://www.hkeaa.edu.hk/en/IR/Standards_of_HKEAA_qualifications/IELTS_2012/index.html)

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More than 165 overseas institutions have already announced their admission requirements for HKDSE holders. The new credential is also accepted by a number of universities in Mainland China, Taiwan and Macau for admission purposes. HKDSE candidates fulfilling the basic requirements are exempted from taking admission tests.

[The general admission requirements for HKDSE holders from different overseas institutions can be found at [www.hkeaa.edu.hk/tc/ir/ircountry\\_hkdse.html](http://www.hkeaa.edu.hk/tc/ir/ircountry_hkdse.html).]

It must be remarked that the promotion of a new qualification is an ongoing exercise. To sum up, the following measures need to be taken to ensure the smooth introduction of SRR:

- (a) Clear articulation of standards and efficient mechanisms for the maintenance of grading standards;
- (b) Benchmarking studies with other examination awards
- (c) Good communication strategies for promulgating examination results

### **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 would be implemented in HKDSE for 12 subjects in 2012. These subjects were: 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 which cannot be assessed in traditional paper-and-pencil tests, 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 or knowledge 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 enquiry study. The weighting of the SBA component is normally around 15%-20% of the total subject mark.

The SBA scores submitted to the HKEAA by teachers are 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 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 are adopted: statistical moderation and moderation by expert judgement. After the examination, HKEAA also sends 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 have enabled schools administrators and teachers to familiarize themselves with the assessment requirements and facilitate the smooth implementation of SBA in the HKDSE. Evaluation statistics show that the majority of schools have implemented appropriate procedures for SBA, with assessment standards for the 2012 HKDSE found to be generally appropriate after moderation. A total of 66% of panel heads agreed or strongly agreed that SBA had become an integral part of the internal assessment in their subject and a further 19% slightly agreed. More than 50% of teachers agreed it enabled students to better understand their strengths and weaknesses. Student feedback has also shown that SBA can improve their learning.

Feedback from teachers and schools indicate that while there is overall support for the rationale of SBA, there are concerns about some of the practicalities in time-tabling; the impact on workload for both students and teachers; and some reports of over-drilling for the assessments.

In the short term review conducted in 2012 – 2013, the SBA schemes for the 12 subjects had been streamlined. In addition, for the other twelve subjects in which SBA has been deferred. In particular, for three of them, namely mathematics, Business, Accounting & Financial Studies (BAFS) and Physical Education, SBA would not be implemented in the future. It was agreed that the skills assessed in the SBA scheme for Mathematics and BAFS could be assessed using the normal pencil tests and in other subject areas. For Physical Education, SBA can be replaced by a practical examination. SBA would continue to be deferred in the other nine subjects to 2019. It was suggested that an evaluation be carried out after the 2016 HKDSE Examination to study the effect of implementing the short term recommendations on schools.

Overall, the following factors need to be considered in the implementation of SBA:

- (a) Close working relationship with schools to handle upcoming problems;
- (b) Evaluating the workload of teachers and students from time to time for gathering their support;
- (c) Gaining consensus from stakeholders on the attributes assessed under the SBA component.

**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. Different subjects would utilize different strategies. Here, three different idiosyncrasies will be outlined:

- (a) The use of differentiated papers in English Language
- (b) The introduction of optional extended parts in Mathematics
- (c) The ‘half-subject’ approach in Combined Science

English Language is a subject taken by practically all candidates. A differentiated paper approach is adopted in this subject. There are four components: reading, writing, listening and speaking. In the reading and listening papers, there are three parts. All students must do Part A and then choose either Part B1, the easier section, or Part B2, the more difficult section. In the grading process, the marks for Part B1 are converted to the marks on the scale for Part B2. The conversion tables are generated using the equipercntile equating method. This ensures that students taking either Part B1 or Part B2 are graded to the equal standard. Students attempting Part A and Part B2 will be able to attain the full range of possible levels, while Level 4 will be the highest level attainable by students attempting Part A and Part B1. The percentages of students choosing Parts B1 and B2 in the reading and listening papers in the 2012 and the 2013 examinations are shown in the table below.

**Table 4. Percentages of Candidates Taking English Language Parts B1 and B2**

	Reading		Listening	
	B1	B2	B1	B2
2012	65	35	50	50
2013	52	48	38	62

It can be seen that a large number of students make use of this system. The percentages of students taking the easier part differ in the reading and listening papers. More students prefer to choose the easier part in the reading paper than in the listening paper. Another observation is that in the second administration of the examination, more students prefer to attempt the more difficult section. Perhaps this is because teachers and students have understood the requirements better after the first examination.

In the case of Mathematics, a special structure has been introduced to cater for learner diversity. Although it is a core subject, not all students would like to study Mathematics up to the level required for admission to science or engineering degree programs. Mathematics has been divided into two parts: the compulsory part and the extended part. All students will take the compulsory part, consisting of basic topics. More able students can take the extended part, which is more advanced. The results for the two parts are reported separately on the certificate. Table 5 shows the number of students taking the compulsory part and the extended part in the 2012 and 2013 examinations. It can be observed that there has been a drop in candidature in the extended part in 2013. The situation is to be reviewed by the Mathematics subject committee.

**Table 5. Percentages of candidates taking the extended part in Mathematics**

Year	Percentage
2012	22%
2013	18%

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 the initial years, the number of candidates taking Combined Science was around 7000, indicating that the arrangements provided are useful to some candidates.

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 adopted in the various subject examinations will help to address the issues and cater for the needs of the wide student population. There is no single solution to solve the problem. Different subjects might use different strategies, but the following factors have to be addressed:

- (a) the ‘half-subject’ approach looks appealing, but subject specialists have to be satisfied that this does not lead to over-fragmentation of subject content;
- (b) the measures introduced for a subject must not create problems for school administration (e.g. timetabling arrangements);
- (c) the results obtained in the special arrangements are acceptable to tertiary institutions for admission purposes.

## **The way forward**

Implementing a new curriculum and new strategies for teaching, learning and assessment is a huge task that will inevitably meet many challenges alongside the early successes. The HKEAA have gathered and listened to feedback from stakeholders, including principals, teachers, students, parents, tertiary institutions and employers. The key challenges identified by schools include

- catering for the much greater diversity of students remaining in school until the end of secondary education;
- managing time to cover the full breadth and depth of the new curriculum;
- implementing SBA and heavy workloads for teachers, as well as for students.

We are now in the process of conducting a review and a strategic approach with multiple stages has been adopted. After balanced consideration of the feedback from the school sector and other stakeholders, measures have been taken to address the practical concerns of schools and further facilitate the implementation of the NSS in Secondary 4 in the 2013/14 school year, leading to the 2016 HKDSE Examination. For example, the examination time for some subjects has been lengthened in line with the depth and breadth required for the subjects while for some subjects, the examination time will be reduced with corresponding streamlining in the paper design. However, the overall standards and curriculum aims for each subject will be maintained.

Continuous efforts will be made to deliberate on the medium- and long-term suggestions. Working Groups were set up for SBA and nine subjects (Chinese Language, Chinese Literature, Mathematics, Liberal Studies, BAFS, Economics, Ethics & Religious Studies, Geography, and Health Management & Social Care) to explore their further development and review the curriculum and assessment of the subjects. Proposals for change include: exploring the feasibility of introducing classical texts and their assessment in Chinese Language; splitting the BAFS subject and/or implementing separate grading for its components; streamlining the assessment requirements in the Independent Enquiry Study (IES) in Liberal Studies.

Given the complexity of the changes, while relevant parties are striving hard to ensure the smooth implementation of the examination, 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 in partnership with stakeholders to ensure the smooth administration of the examination.

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