Summary of the Findings of the Research Studies Conducted in 1998

The summaries[9] of the two research studies are as follows:

Research Study 1 – Comparative Studies of the Mathematics Curricula of Major Asian and Western Countries

The study consists of three components: a literature review, an analysis of curriculum documents, and a summary of the Hong Kong results in the TIMSS. The main findings are:

(a) The revised Secondary Mathematics Currciulum (1999) in Hong Kong is generally in line with worldwide trends.

(b) The Hong Kong mathematics curriculum attempts to strike a balance between process abilities (which are very much emphasized in the West) and basic skills and content (which are stressed in Asian countries).

(c) In Hong Kong, the introduction of topics into the curriculum is on average 2 years earlier than the international average.

(d) The textbooks in Hong Kong focus much of their attention on students' performance of "knowing" and "using routine procedures".

(e) A "canonical" curriculum is usually stipulated by the governments in Asian countries and is followed closely in schools.

(f) East Asian countries put a lot of emphasis on textbooks; by contrast, Western countries are more flexible in their use of textbooks.

(g) Tracking for mathematics teaching is common, and there are various ways of implementing tracking in different countries.

(h) Hong Kong is probably the place with the least flexibility and choice in its mathematics curriculum.

The results of TIMSS, which are relevant to the theme of the study, are also summarized:

(a) Hong Kong students came fourth both in the 26 countries in grade four and the 41 countries in grade eight. They performed very well in routine problem solving, not so well in solving exploratory problems, and significantly worse in the TIMSS Performance Assessment, where students were required to conduct hands-on activities.

[9] The summaries are abridged from Chapter 3 of the final report of the Ad hoc Committee, namely "Report on Holistic Review of the Mathematics Curriculum".

(b) Students in Hong Kong, like their counterparts in the rest of the TIMSS countries, found mathematics important, but they did not particularly like mathematics.
(c) Contrary to the common belief that students in East Asian countries attribute success more to hard work than to natural talent or ability, and that they attach a lot of importance to memorization, the TIMSS results indicate that students do not totally support these stereotypes. Teachers in Hong Kong however did not tend to believe in natural talent.
(d) Students in Hong Kong did not think that they did well in mathematics, and in general girls had a lower perception of their ability than boys.
(e) Compared to their counterparts elsewhere, Hong Kong students spent more out of school time doing mathematics homework, studying mathematics or attending extra mathematics lessons, especially at the primary school level.

The results show that Hong Kong students did extremely well in the TIMSS mathematics tests, but that some students did not display the corresponding level of positive attitudes towards mathematics and some lacked confidence in doing mathematics.

Research Study 2 – An Analysis of the Views of Various Sectors on the Mathematics Curriculum

The main findings are:
(a) Both students and parents showed a high regard for mathematics.
(b) Different stakeholders held a positive view of the mathematics curriculum.
(c) Mathematics education should address a wider range of objectives. HOTS should be addressed and teaching should provoke student thinking.
(d) The interest of students has to be maintained.
(e) The curriculum should be re-designed with epistemological and pedagogical considerations, so as to strengthen thinking and conceptual understanding.
(f) The problem of learner differences has to be addressed, including curriculum differentiation at senior secondary level.
(g) The idea of a core and extended curriculum is worth further exploration.
(h) Continuity through all levels should be secured. Teachers at various learning stages should have knowledge of the curriculum of other learning stages.
(i) Assessment and examination pressure should be carefully handled.
(j) The teacher is the key person in curriculum reform and he/she needs guidance and support on various issues including use of information technology, enhancement of process abilities and curriculum tailoring.

(k) Pre-service and in-service teacher education should be strengthened.

(l) Collegiate exchange in the field should be promoted.

(m) Different stakeholders should be well informed of future curriculum changes, so that they provide support.

(n) The workload of teachers should be carefully considered.