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Panel on Education

Meeting on 14 November 2016

Background brief on the promotion of Science, Technology, Engineering and Mathematics Education

Purpose

This paper provides background information on the promotion of Science, Technology, Engineering and Mathematics ("STEM") education in the schools of Hong Kong and summarizes the major views and concerns of Members about STEM education.

Background

2. In his 2015 and 2016 Policy Addresses, the Chief Executive announced that the Education Bureau ("EDB") would renew and enrich the curricula and learning activities of Science, Technology and Mathematics, and enhance the training of teachers, thereby allowing primary and secondary students to fully unleash their potential in innovation.

Aim and objectives of STEM education

3. According to the Administration, the promotion of STEM education in Hong Kong aligns with the worldwide education trend of equipping students with the capability to meet the changes and challenges in society and around the world with rapid economic, scientific and technological developments. The promotion of STEM education is introduced as one of the key emphases under the ongoing renewal of school curriculum. It aims to strengthen the Science, Technology and Mathematics Education as Key Learning Areas ("KLAs") to nurture diversified talents in the science and technology fields for enhancing the international competitiveness of Hong Kong.

4. The specific objectives of promoting STEM education include –

(a) to develop among students a solid knowledge base and to enhance their interests in Science, Technology and Mathematics for further studies and careers in meeting the changes and challenges in the contemporary world;

(b) to strengthen students' ability to integrate and apply knowledge and skills, and to nurture students' creativity, collaboration and problem solving skills, as well as to foster their development of innovation and entrepreneurial spirit as required in the 21st century; and

(c) to strengthen the professional capacity of and collaboration among teachers in schools and the partnerships with community stakeholders.

Proposed strategies for promoting STEM education

5. In promoting STEM education, the Curriculum Development Council has proposed to adopt a holistic approach through the following six strategies to strengthen students' integration and application of knowledge and skills across different disciplines:

Strategy 1 – Renew the curricula of Science, Technology and Mathematics Education KLAs

Strategy 2 – Enrich learning activities for students

Strategy 3 – Provide learning and teaching resources

Strategy 4 – Enhance professional development of schools and teachers

Strategy 5 – Strengthen partnerships with community key players

Strategy 6 – Conduct review and disseminate good practices

6. A two-month consultation commencing in November 2015 was conducted with various stakeholders to solicit views on the promotion of STEM education. The Administration planned to start implementing progressively the proposed strategies the earliest in the 2016-2017 school year.

Major views and concerns

7. During the Fifth Legislative Council, members of the Panel on Education ("the Panel") deliberated on the promotion of STEM education at its meeting held on 14 December 2015. The major views and concerns expressed by members are summarized in the ensuing paragraphs.

Issues related to the curricula of relevant subjects

8. Some members noted that in promoting STEM education, there was an increase in curriculum contents for Science and Mathematics curricula at junior secondary level. They enquired whether the Administration would increase the overall curriculum time for individual STEM KLAs at junior secondary level to cater for additional subjects, or adjust the proportion of curriculum time allocated to different topics. The Administration explained that to facilitate school-based planning, schools were given the flexibility to allocate the total lesson time for each science-related subject within a permissible range. This flexibility in the allocation of curriculum time should be able to accommodate the enrichment of curriculum contents. Schools could also work out their school-based arrangements such as collaboration projects among subject teachers to cater for learning needs across different disciplines.

9. Noting that there was no engineering subject under the New Senior Secondary curriculum, members were concerned about the articulation from secondary level to tertiary level in engineering studies. The Administration advised that engineering-related courses were offered under the Applied Learning subjects at senior secondary level. Furthermore, the Administration would work with tertiary institutions and organizations which provided career guidance and counselling services for students. EDB would organize education fairs for students on a regular basis to showcase the achievements and development in STEM-related areas.

Enhancing students' interest in STEM education

10. Members were concerned about the measures taken by the administration to enhance students' interest in STEM, the Administration explained that students would be encouraged to gain hands-on experience in applying their knowledge and skills by participating in STEM-related activities and to solve daily life problems with practical solutions and innovation designs. With the implementation of life-planning education, students would better understand different STEM-related areas and ascertain their interest in STEM.

Promoting STEM education

11. The Panel was aware of a general bias in the community in favour of finance and business-related education and training to qualify as professionals. Members considered that more should be done to promote public understanding of STEM with a view to enhancing its acceptance and recognition among different sectors of the community. In response, the Administration advised that EDB would strengthen liaison with academics and practitioners who specialized in various STEM fields, as well as professional bodies and non-government organizations in fostering synergy within the community for the promotion of STEM education among schools.

Support for gifted students

12. Question had been raised on measures to support students who were gifted in STEM-related areas. The Administration advised that it would work with different partners, including the Hong Kong Academy for Gifted Education, to promote STEM education.

Latest position

13. The Administration will brief the Panel on the progress of the promotion of STEM education at the meeting on 14 November 2016.

Relevant papers

14. A list of relevant papers on the website of the Legislative Council is in the **Appendix.**

Council Business Division 4
Legislative Council Secretariat
10 November 2016

Appendix

List of relevant papers

Committee	Date of meeting	Paper
Legislative Council	3.12.2014	Official Record of Proceedings Pages 104-114 (Question 14)
Panel on Education	14.12.2015 (Item VI)	Agenda CB(4)321/15-16(05) Minutes

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