

**立法會**  
***Legislative Council***

LC Paper No. FC143/17-18

(These minutes have been  
seen by the Administration)

Ref : FC/1/1(11)

**Finance Committee of the Legislative Council**

**Minutes of the 21<sup>st</sup> meeting  
held at Conference Room 1 of the Legislative Council Complex  
on Friday, 24 March 2017, at 3:00 pm**

**Members present:**

Hon CHAN Kin-por, BBS, JP (Chairman)  
Hon James TO Kun-sun  
Hon LEUNG Yiu-chung  
Hon Abraham SHEK Lai-him, GBS, JP  
Hon Tommy CHEUNG Yu-yan, GBS, JP  
Prof Hon Joseph LEE Kok-long, SBS, JP  
Hon WONG Ting-kwong, SBS, JP  
Hon Starry LEE Wai-king, SBS, JP  
Hon CHAN Hak-kan, BBS, JP  
Hon WONG Kwok-kin, SBS, JP  
Hon Mrs Regina IP LAU Suk-yee, GBS, JP  
Hon Paul TSE Wai-chun, JP  
Hon Claudia MO  
Hon Steven HO Chun-yin, BBS  
Hon WU Chi-wai, MH  
Hon YIU Si-wing, BBS  
Hon MA Fung-kwok, SBS, JP  
Hon Charles Peter MOK, JP  
Hon CHAN Chi-chuen  
Hon LEUNG Che-cheung, BBS, MH, JP  
Hon Kenneth LEUNG  
Hon Alice MAK Mei-kuen, BBS, JP  
Dr Hon KWOK Ka-ki  
Hon KWOK Wai-keung  
Hon Dennis KWOK Wing-hang  
Hon Christopher CHEUNG Wah-fung, SBS, JP  
Dr Hon Helena WONG Pik-wan

Hon IP Kin-yuen  
Dr Hon Elizabeth QUAT, JP  
Hon Martin LIAO Cheung-kong, SBS, JP  
Hon POON Siu-ping, BBS, MH  
Dr Hon CHIANG Lai-wan, JP  
Ir Dr Hon LO Wai-kwok, SBS, MH, JP  
Hon CHUNG Kwok-pan  
Hon Alvin YEUNG  
Hon Andrew WAN Siu-kin  
Hon CHU Hoi-dick  
Dr Hon Junius HO Kwan-yiu, JP  
Hon HO Kai-ming  
Hon LAM Cheuk-ting  
Hon Holden CHOW Ho-ding  
Hon SHIU Ka-fai  
Hon SHIU Ka-chun  
Hon YUNG Hoi-yan  
Dr Hon Pierre CHAN  
Hon CHAN Chun-ying  
Hon Tanya CHAN  
Hon HUI Chi-fung  
Hon LUK Chung-hung  
Dr Hon CHENG Chung-tai  
Hon Jeremy TAM Man-ho  
Hon Nathan LAW Kwun-chung  
Dr Hon YIU Chung-yim  
Dr Hon LAU Siu-lai

**Members absent:**

Hon Michael TIEN Puk-sun, BBS, JP (Deputy Chairman)  
Hon Jeffrey LAM Kin-fung, GBS, JP  
Dr Hon Priscilla LEUNG Mei-fun, SBS, JP  
Hon LEUNG Kwok-hung  
Hon Frankie YICK Chi-ming, JP  
Hon CHAN Han-pan, JP  
Dr Hon Fernando CHEUNG Chiu-hung  
Hon Jimmy NG Wing-ka, JP  
Hon Wilson OR Chong-shing, MH  
Hon CHEUNG Kwok-kwan, JP  
Hon LAU Kwok-fan, MH  
Hon Kenneth LAU Ip-keung, MH, JP  
Hon KWONG Chun-yu

[According to the Judgment of the Court of First Instance of the High Court on 14 July 2017, LEUNG Kwok-hung, Nathan LAW Kwun-chung, YIU Chung-yim and LAU Siu-lai have been disqualified from assuming the office of a member of the Legislative Council, and have vacated the same since 12 October 2016, and are not entitled to act as a member of the Legislative Council.]

**Public officers attending:**

Ms Elizabeth TSE Man-yee, JP	Permanent Secretary for Financial Services and the Treasury (Treasury)
Ms Carol YUEN, JP	Deputy Secretary for Financial Services and the Treasury (Treasury) 1
Mr Alfred ZHI Jian-hong	Principal Executive Officer (General), Financial Services and the Treasury Bureau (The Treasury Branch)
Mr Kevin YEUNG Yun-hung, JP	Under Secretary for Education
Dr Catherine CHAN Ka-ki	Deputy Secretary for Education
Mr Sheridan LEE Sha-lun	Principal Assistant Secretary for Education (Curriculum Development)

**Clerk in attendance:**

Ms Anita SIT	Assistant Secretary General 1
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**Staff in attendance:**

Mr Derek LO	Chief Council Secretary(1)5
Ms Ada LAU	Senior Council Secretary (1)7
Mr Raymond SZETO	Council Secretary (1)5
Mr Frankie WOO	Senior Legislative Assistant (1)3
Miss Yannes HO	Legislative Assistant (1)6

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- Item 1** — **FCR(2016-17)82**  
**HEAD 156** — **GOVERNMENT SECRETARIAT : EDUCATION BUREAU**  
**Subhead 700** — **General non-recurrent**  
**New Item** — **"One-off grant to secondary schools for promotion of Science, Technology, Engineering and Mathematics education"**

The Chairman said that this item sought members' approval for the creation of a new commitment of \$102.6 million for a one-off grant to secondary schools for the promotion of Science, Technology, Engineering and Mathematics education.

2. At the invitation of the Chairman, Dr CHIANG Lai-wan, the Chairman of the Panel on Education, reported that at the meeting of the Panel on 14 November 2016, members of the Panel generally supported the Administration's submission of this funding proposal to the Finance Committee for the promotion of Science, Technology, Engineering and Mathematics ("STEM") education. Some members pointed out, however, that the one-off grant was not sufficient for the continued development of STEM education in schools and hoped that the Administration would consider providing schools with recurrent funding. To encourage schools to actively promote STEM education, Panel members requested the Administration to provide appropriate support for schools through updating the relevant curricula, enhancing teachers' professional training, enriching learning activities, enhancing students' interest in STEM subjects, setting down guidelines for the procurement of materials and services, and minimizing the administrative work brought by the promotion of STEM education.

#### Promotion of STEM education

3. Ms YUNG Hoi-yan was worried about the adequacy of the \$200,000 grant for each school as proposed in the present funding proposal. She asked if the Administration had formulated a policy objective for STEM education, and how the Administration evaluated the effectiveness of the grant.

4. Dr Elizabeth QUAT considered that the proposed one-off grant was not sufficient for the effective promotion of STEM education and relevant supportive measures should be introduced on an on-going basis.

5. Mr IP Kin-yuen, Mr SHIU Ka-chun and Mr Charles Peter MOK questioned that the provision of a one-off grant was neither the right nor the sustainable way to promote the development of STEM education. To develop STEM education, the Administration should have long-term planning, offer employment prospects, and provide appropriate support and teacher training for schools so as to encourage more students to enrol with STEM education. Mr Tommy CHEUNG expressed similar views.

6. Dr KWOK Ka-ki criticized that the \$200,000 one-off grant was insufficient and it could not resolve the prevailing problem of poor atmosphere of STEM education which was generated by the existing academic system.

7. Ir Dr LO Wai-kwok hoped that the Administration could persevere with the promotion of STEM education and change the atmosphere of STEM education through careful cultivation.

8. Under Secretary for Education replied that the Administration published a report on STEM education policy at the end of last year and set down the policy direction. Its long-term goal was to enhance the practical application of the relevant curricula by designing them in parallel with the current primary and secondary curricula and making connections across different subjects. The one-off grant of \$200,000 to be provided for each secondary school would act as the start-up subsidy to give schools extra funds to acquire equipment, teaching materials and software in the initial stage of the promotion of STEM education. He stressed that the Administration understood members' concerns and was well aware that this grant alone could not resolve all problems encountered during the promotion of STEM education. The Administration would continue to provide adequate resources for schools through existing recurrent subsidies to facilitate the continued development of STEM education. This grant was merely aimed at providing additional funds to support schools in promoting STEM education, allowing them to use the funds flexibly according to their own needs. The Administration intended to allocate more resources as necessary for the implementation of STEM education on an on-going basis.

9. Noting that one of the objectives of this grant was to update/renew STEM-related curricula, Mrs Regina IP asked whether the task would be taken up by the Curriculum Development Institute under the Education Bureau ("EDB"). Under Secretary for Education confirmed that the work was within EDB's ambit. The Administration would soon embark on the introduction of the relevant curriculum-updating exercise.

10. Dr Elizabeth QUAT was concerned about the possible digital divide among various schools arising from their different time and pace in the promotion of STEM education and asked how the Administration would deal with that problem. Mr CHU Hoi-dick also expressed similar concerns. He doubted that the grant of a uniform amount of \$200,000 to all schools was not conducive to effectively assisting schools with a slower progress to catch up with those which were more advanced in promoting STEM education.

11. Under Secretary for Education shared members' concerns about the digital divide. He pointed out that the Administration's policy direction was to deal with that particular issue. The Administration would pay special attention to schools with a slower pace in the development of STEM education and help them learn from the experience of schools that were more advanced in this area through the sharing of information among them. Moreover, funding was not the only key factor that determined a school's success in the development of STEM education; rather, the professional support provided by EDB was also of paramount importance. The Administration would lend support to schools, deepen teachers' understanding of the various strategies employed to promote STEM education, allow schools to decide for themselves the direction of development, and provide in-school training for teachers.

12. Mrs Regina IP and Ir Dr LO Wai-kwok asked whether local universities would, in terms of admission requirements, attach more importance to STEM subjects, such as the extended modules of M1 and M2 (advanced mathematics), thereby encouraging secondary school students to enrol in those subjects. Ir Dr LO was worried that universities might not have attached sufficient importance to STEM subjects. Mrs Regina IP was concerned about the University of Hong Kong's recent plan to scrap its astronomy major programme and the joint mathematics/physics major programme, as such situation might reflect the University's tendency of overlooking the importance of STEM-related programmes and that was not conducive to the development of STEM.

13. Dr CHENG Chung-tai and Mr CHAN Chi-chuen asked how the Administration would work with universities in the promotion of STEM education. The members were worried that as all universities were business-oriented, they might not be able to promote the development of STEM education effectively.

14. Under Secretary for Education replied that EDB had discussed the relevant issues with universities in the hope that they would clarify and adjust their admission requirements for STEM-related programmes. As far as the Administration understood, the admission requirements of the relevant programmes of The Hong Kong University of Science and Technology would lay emphasis on students' performance in the extended modules of M1 and M2 (advanced mathematics). In respect of Mrs IP's concerns, Under Secretary for Education pointed out that universities had the autonomy to decide whether or not individual programmes would be offered but the Administration's policy was to promote the development of STEM-related programmes. On the whole, the Government noted that there was an increase in the number of university places offered for the relevant programmes.

15. As regards specific examples of cooperation with universities, Deputy Secretary for Education said that the Administration would use gifted education as the entry point to give gifted secondary students, whose knowledge of STEM subjects had likely reached the university level, better access to the STEM-related programmes provided by universities. Moreover, vocational training centres also provided hands-on opportunities for senior secondary students to apply their STEM knowledge.

16. Regarding university admission requirements for STEM-related programmes, at Mr WU Chi-wai's request, Deputy Secretary for Education undertook to provide information after the meeting on the situation where students who had not enrolled in STEM-related subjects under the new senior secondary ("NSS") academic structure were admitted by universities to STEM-related programmes.

*[Post-meeting note: The supplementary information provided by the Administration was issued to members vide LC Paper No. FC161/16-17(01) on 5 June 2017.]*

17. Mr WU Chi-wai asked about the Administration's understanding of the prevailing situation regarding the promotion of STEM education in schools.

18. Mr Nathan LAW asked whether the grant was aimed at cultivating a STEM-literate community or nurturing STEM elites. He also asked the Administration to expound on its STEM education policy.

19. Under Secretary for Education said that after looking deeply into the situations of various schools, the Administration found that different schools, with varied needs, followed different models and had different pace in their development of STEM education. The present policy focused on enhancing students' overall interest in STEM education. However, on account of the different situations in different schools, the Administration intended to allow schools to decide the way in which the grant was to be used, in accordance with their needs.

20. Ms Claudia MO said that the promotion of STEM education could not help change the dire straits in which students, albeit having satisfactory academic standards, had not been adequately trained in other abilities. This was the result of the present education system which was oriented towards examination results and international competitiveness.

21. Under Secretary for Education responded that in respect of Ms MO's concerns, one of the major highlights of the Administration's promotion of STEM education was to nurture students' abilities to make connections across different subjects and apply such knowledge. The Administration also intended to raise Hong Kong students' overall competitiveness, and encourage them to appreciate the achievements of other places in innovative technology through participation in international competitions. However, it would not use students' competition results as an indicator for evaluating their performance.

22. Dr Helena WONG said that she agreed in principle to the Administration's policy direction of promoting STEM education. She asked whether the Administration had considered working with the Innovation and Technology Bureau ("ITB") and the Hong Kong Science and Technology Parks Corporation ("HKSTPC") to launch programmes to encourage students to engage in innovation and technology.

23. Mr SHIU Ka-chun was worried that EDB had not provided sufficient support for schools and adequate training for teachers for the promotion of STEM education.



24. Under Secretary for Education and Deputy Secretary for Education said that the Administration supported strengthened cooperation between schools and the industry. EDB had all along worked closely with ITB, introducing various schemes to attract students to study innovation and technology and put their knowledge into practice. As far as the Administration understood, many schools had joined hands with HKSTPC or universities and a STEM centre was in the pipeline for the purpose of offering students the chance to learn about the latest technological development. Some universities were considering the possibility of allowing secondary school students to use their laboratories.

25. Dr CHENG Chung-tai asked if the Administration would assess, from the entertaining aspects of STEM subjects, whether the grant could enhance the attractiveness of STEM subjects for students.

26. Under Secretary for Education said that according to the Administration's understanding, in respect of STEM education, schools also provided students with diversified out-of-classroom learning opportunities by organizing computer programme design competitions, robotics competitions, technological research programmes, etc.

27. Mrs Regina IP said that as far as she was aware, certain members of the education sector wished to form a team to participate in the International Mathematical Modeling Challenge ("IMMC"). She urged EDB to provide support for them. Deputy Secretary for Education replied that the Administration had contacted them who had indicated the intention to form a committee between 2017 and 2018, striving to enter IMMC in 2022.

#### Impact of the new senior secondary academic structure on the promotion of STEM education

28. Mr IP Kin-yuen was concerned about the trend of a drastic drop in the number and ratio of students sitting for examinations on STEM subjects (such as physics, chemistry and biology) in the Hong Kong Diploma of Secondary Education Examination ("HKDSEE") in recent years as compared to the corresponding figures in the 2010 Hong Kong Certificate of Education Examination ("HKCEE"). As a result, there was a shortfall of students eligible to be admitted to the science and engineering faculties of universities. Mr Charles Peter MOK expressed a similar concern. He queried whether the HKDSEE system had discouraged secondary students from taking STEM-related subjects.

29. Mr WU Chi-wai asked whether the Administration had conducted a study on how the change in the NSS academic structure (shortening the duration of secondary education from seven to six years and lengthening the duration of university education from three to four years) had impacted candidates' enrolment in STEM subjects; if so, what the findings were.

30. Under Secretary for Education said that the trend as observed by Mr IP might be relevant to the change in the examination system. HKDSEE only required students to take two to three elective subjects, as compared to five or six required by the then HKCEE. Hence, there would definitely be fewer students taking the elective subjects of physics, chemistry, biology, etc. Regarding the impact of changes in secondary and university education systems on the standards of students, Deputy Secretary for Education added that the Administration had compared Hong Kong's situation with those in overseas places. It was found that there was no decline in the performance of students under the NSS academic structure who sat for HKDSEE (Level 3 or above in HKDSEE was comparable to the level of General Certificate of Education A Level Examination in the United Kingdom). After the duration of university education was extended from three years to four, universities had adjusted their teaching arrangements and offered more articulation courses for first-year students who might not have sufficient exposure to STEM subjects in their secondary school years.

#### Policies and value-for-money indicators

31. Dr YIU Chung-yim enquired about the value-for-money basis adopted by the Administration in relation to the promotion of STEM education. He requested information on the method of conducting baseline assessment, number of schools to be inspected by EDB in the next three years, number of inspections, composition of inspection teams (whether there would be experts outside EDB in the teams), areas of inspection, as well as how EDB would evaluate the overall effectiveness of the grant.

[*Post-meeting note:* The supplementary information provided by the Administration was circulated to members vide LC Paper No. FC161/16-17(01) (Chinese version only) on 5 June 2017.]

32. Under Secretary for Education said that the Administration would evaluate the effectiveness of the policy through various means, including school visits, to learn about the measures adopted by schools to implement STEM education and students' participation in STEM-related activities. However, out of respect for the actual situations of and the varying pace of development adopted by different schools, the Administration would not formulate a set of uniform benchmarks.

33. Noting that the Administration was keen on promoting innovation and technology and re-industrialization to foster economic growth, Mr CHU Hoi-dick asked whether the Administration would, in tandem with the aforesaid policy on economic growth, use the increase in the number of students studying STEM subjects as an indicator for policy effectiveness. Mr CHAN Chi-chuen raised a similar question.

34. Under Secretary for Education said that the Administration's policy objective was to enhance students' interest in learning and deepen their understanding of innovation and technology, hence it had no intention to use the increase in the number of students studying STEM subjects as an indicator.

#### Staffing establishment of laboratory technicians

35. Mr HO Kai-ming supported the Government's allocation of more resources to develop STEM subjects in order to catch up with our competitors such as Singapore. He was concerned that some secondary schools had planned to reduce the staffing establishment of laboratory technicians because the existing establishment could only be maintained if they applied for additional funding from EDB. He was worried that the situation concerned might run against the Government's policy direction of promoting STEM education. Mr HO also pointed out that since all schools had to offer chemistry, biology and physics subjects, each school, under all circumstances, should have at least three laboratory technicians and the number of laboratory technicians should not be affected by the number of classes or students in school.

36. Under Secretary for Education said that the Administration had earlier reviewed the establishment of laboratory technicians in secondary schools and re-calculated the staffing requirements for laboratory technicians under the updated curricula (including the requirement for the promotion of STEM education). On the whole, according to the new calculation method, there would be an increase in the ratio of the staffing establishment of laboratory technicians but individual schools might have a surplus of laboratory technicians. Nevertheless, it was the

Administration's policy that schools with surplus manpower might, through streamlined procedures, apply to temporarily retain their manpower until the end of the 2019-2020 school year, and EDB would provide special support for that purpose.

Amount of the grant

37. In response to Dr KWOK Ka-ki's enquiry about the amount of the grant, Under Secretary for Education said that the Administration had set the level of the grant at \$200,000 after consultations with schools.

38. Mr Jeremy TAM was concerned that all schools, albeit having different numbers of students, would receive the same amount of grant. He was of the opinion that it would be unfair to schools with more students if all schools were given the same amount of grant. He suggested that consideration should be given to determining the amount of grant on the basis of the number of students.

39. Under Secretary for Education replied that as the amount of grant had nothing to do with the number of students in a school, there were no precise data in this respect, but in general the number of classes in a secondary school ranged between 18 and 30-odd.

Other concerns and views

40. Dr Elizabeth QUAT urged the Administration to further promote Science, Technology, Engineering, Art and Mathematics ("STEAM") education to catch up with cutting-edge international development.

41. Under Secretary for Education agreed to the direction of promoting STEAM education and would take this into account when reviewing the relevant policies in future. He pointed out that individual schools had already embarked on the development of STEAM education.

42. Noting that the Administration had provided primary schools with a grant of \$100,000 last year for the promotion of STEM education, Ms YUNG Hoi-yan asked about the efficacy of the grant.

43. Under Secretary for Education replied that although the grant had been offered for a short time only and marked efficacy had yet to be seen, according to the Administration's observation, the general atmosphere of STEM education in schools had been enhanced to a certain extent.

44. Dr CHENG Chung-tai said that STEM education emphasized the spirit of truth-seeking through science. He was worried that the Administration would hinder students from seeking the truth because of political factors, thereby preventing students from putting the true meaning of STEM education into practice.

45. In response, Under Secretary for Education said that the Administration promoted STEM education merely from the perspective of facilitating student learning, and its objective was to enhance students' problem-solving ability and provide them with more opportunities to explore STEM-related knowledge.

46. The meeting ended at 5 pm.

Legislative Council Secretariat  
23 February 2018