From “Rooftop” to “Millennium”: the Development of Primary Schools in Hong Kong since 1945

CHUNG, Chak
NGAN, Ming-yan

Hong Kong Institute of Education

This is a study on the evolution of primary education in Hong Kong as reflected in the various designs of primary schools since 1945. This study also shows the relationship between different designs of school building and the conceptualizations of education that underpin them. Six basic primary school designs or prototypes have been identified since 1945. The rooftop primary schools built in the 1950s set a pattern for decades to come relating to the provision of primary education in Hong Kong. Finally this study contrasts the differences in primary education between the British colonial government and the new Special Administrative Region of Hong Kong Government after 1997 when China resumed her sovereignty over Hong Kong.
**Introduction**

In recent years, the physical aspect of public schools has received considerable attention (Earthman, G.I & Lemasters, L. 1997). Like Getzels (1974), we maintain that the school building is more than the physical site to contain teaching and learning. School design also sends a message to its occupants and to the community: “Our visions of human nature find expression in the buildings we construct.”(Getzels 1974, p.538).

In the early 19th century America, Henry Bernard in America proposed the idea of linking physical environment to pedagogical theory. He maintained that the styles of the school building exterior should exhibit correct architectural proportion. Thus, the school building would be calculated to inspire children and the community generally with respect for the object to which it is devoted (Uline 2000, p.456). Many studies (Earthman & Lemasters, 1997; Brubaker C.W.1998; Maxwell, L.E. 1999) reveal the positive relationship between the physical well being provided by school buildings, student achievement and sense of belonging. At any rate, the design, both exterior and interior, of the school does reflect the designer’s concept of education. A study on these different school building designs will illustrate how the government perceives education at different times.

**The Hong Kong primary school evolution since 1945**

In this paper, the evolution of primary education in Hong Kong since 1945 is outlined. We trace the design and construction of primary schools and argue that provision of a positive learning environment should be the foremost concern designing school premises. According to Chan (1996, p.1), a positive learning environment consists of four main factors: visual, acoustical, aesthetic and thermal environment. The visual environment refers to appropriate lighting system in the classroom to facilitate students in focusing their tasks. The acoustical environment means a well design environment free from external noise disturbance. The aesthetic environment focuses on an appropriate use of pastel color to accommodate student learning activities. The thermal environment includes adequate air conditioning, heating and air ventilation. Besides the four basic environment factors, size, location, spatial relationship are among some of the other important considerations (Chan, 1996, p.2).

In this paper, we try to explore the relationship between different designs of school building and the conceptualizations of education that underpin them. It will focus on the different designs of primary schools, which were directly designed and constructed by the Hong Kong government including the government-run and the government-subsidized schools, which take over 90% of local primary schools now.

As each new primary school design would undergo continuous modification, only major prototypes will be discussed. Invariably these schools were built in factory-like manner: minimum cost with maximum output at shortest time. So schools built in the same time period usually share identical factory-like design and structure, often disregarding the topography or other physical conditions. Worst still, the schools were built for users, not through consultation with the users. No consultation was made with teachers, headmasters, the school-running bodies, or other stakeholders. **According to a retired senior official in the school building section of the Education Department, as a rule, the school-running bodies did not know which school premise had been assigned to them until the construction work was completed.**

In addition to documentary analysis and archive searching, data was gathered through interviews with some key officials in the Education Department and Architecture Department involved in designing schools.

**Historical background**

After the defeat of the Japanese in the Second World War, the British resumed her control over Hong Kong at a time when colonialism was declining rapidly. Added to the challenges from anti-imperialism, the British in Hong Kong were also confronted by the Communism when Mao Tse-tung took control of Mainland China.

Part of the British reconstruction plan in Hong Kong was the provision of education as detailed by the seven-year plan outlined in the 1951 Fisher Report (Director of Education: Annual Departmental Reports,
During this 1950s post war period, a number of high-quality and standardized government primary schools were built for the local Chinese pupils. The quality of these government primary schools built in the 50s was never again matched until the end of the British rule. The number of these schools was small because they were built not for the mass but for the elite. They existed as exemplars to show the superiority of the British Hong Kong government, not for emulation by other school-running bodies of the day. (The British people, who comprise less than 5% of the population, had maintained a separate system.)

Hong Kong had faced enormous population growth after 1949. This was caused by the influx of so the called “refugees” from Communist Mainland China and the subsequent high birth rate. Sweeting (1991) compares Hong Kong society to a “wok” (Chinese frying pan) rather than a melting pot in that “various separate ingredients are rapidly and briefly stir-fried in a very heated and high-pressured atmosphere (p.65).

And education is one of such examples. Roughly speaking, from 1950 to 2000, the population in Hong Kong grows at a rate of a million in ten years. That is equivalent to adding a new medium-size town a year in Hong Kong.

At first the post war Hong Kong colonial government retained its pre-war passive, laissez-faire and elitist education policy. Through its education system, it aimed at producing officials to serve in the colonial government. Such policy was criticized as producing "senior-class Chinese":

The transient nature of the Hong Kong population has often been used as an excuse by the government to avoid long-term planning in education. It was also initially used to justify the non-provision of education services for the waves of immigrants arriving in Hong Kong in the late 1940s and early 1950s (Sweeting 1991, p.68). Thus while the British Education Act of 1870 had placed the responsibility of universal basic education on the government in Britain, it took more than a century time to do the same in her colony in Hong Kong. It was not until the publication of the White paper on Educational Policy in 1965 (Education Policy, 1965) that the British colonial government announced the provision of universal primary education in Hong Kong. To accommodate the enormous increase of population, especially the children, schools of different sorts were built. Since 1950s, the public schools in Hong Kong have been built, on average, at a rate of one school per week, according to a retired official. Invariably schools were built according the current standardized design. Since 1945, six basic designs or prototypes have been identified. These include the following configurations:

1. **The “U-shape” government directly run primary schools: 1950s**
   Prior to the mid-50s, schools in Hong Kong were developed by religious and charitable organizations, both from local and overseas, with no design input from the government. **According to a retired official, the British colonial government granted land to the school running bodies. It was up to these school running bodies design their own schools. Thus, many of these primary schools were designed in British, American, or Italian styles.**

   In 1951, the Fisher Report recommended a Ten Year Plan in education and recommended to build five new government primary schools each year. The design and structure of these primary schools were of top standard, comparable to those built in the U.K, according to a retired senior official in the Education Department. There were twenty-four classrooms and special rooms for music, woodwork, domestic science, and medical. Arranged in open “U-shape”, there is a basketball court in the middle. A garden and a small garage were also provided. The rooftop and the ground floor provided additional space for physical education lessons. The visual, acoustic, aesthetic, and thermal environments were of top qualities with equipment imported from the U.K, **the retired official said.**

   The teachers in these government-directly-run schools were civil servants. They were fully trained graduates from the local teacher training colleges. Their pay was substantially above their counterparts in other government-subsidized schools.

2. **The rooftop schools: 1950s**
   Though the Fisher Report in 1951 recommended a Ten Year Plan in education and recommended the building of five new government primary schools each year, the influx of refugees soon overwhelmed the
plan. In 1954, the British colonial government admitted “it would be impossible to provide the schools under the normal development programme” (Director of Education, Annual Departmental Reports, 1953-54, 1954, p.7). With the advent of mass public housing development following the 1953 squatter fires, the government began to play more active role in educational provisions. Instead of building more than fifty standard primary schools to meet the pressing needs of the population, the government made use of the spare spaces in her public housing program to build “rooftop” schools there.

The huge Hong Kong public housing program came into being after the 1953 Shek Kip Mei Fire, which left sixty thousand people homeless. The rooftop and in some cases the ground floor of these “resettlement estates” were converted into primary schools.

“ *It was decided that the necessary schools could be provided most economically under the Subsidy Code with reputable private bodies...Schools, each of 6 classrooms and accommodating about 500 children in two sessions, have now been opened in the resettlement areas at King’s Park, Tung Tau Tusen and Ngan Tau Kok...*”(Director of Education, Annual Departmental Reports, 1953-54, 1954, p.7).

These rooftop schools were the “most economical” (Director of Education, Annual Departmental Reports, 1953-54, 1954). Usually each rooftop school contained 6 to 8 classrooms admitting 500 to 650 children in two sessions, one in morning and another in the afternoon. In some cases, a third session was held in late afternoon too. In addition, some private primary schools were allowed inside private residential apartment buildings

In a typical “rooftop” school, there were three classrooms, one at each end of the roof leaving the space in the middle open. Some resident units on the adjacent floors were converted into school staff rooms and general office. No special room was available for music, arts, or craft lessons. For these schools, there were no courtyard, assembly hall, medical room, kitchen, cafeteria, nor gymnasium. The teaching equipments amounted to no more than chalk and board. The classrooms were un-decorated and were barely furnished. In these schools, while the visual environment was barely satisfactory according to Chan’s (1996) framework, the other three environments, namely the acoustical, aesthetic, and the thermal, were poor. It was not uncommon for children to hear what the teachers in other classes were teaching. In summer, the rooftop classrooms were particularly hot.

In these schools, the teachers were poorly paid and most of them were untrained. Clearly, these schools had been “built” for the refugees’ children. In fact, they functioned more like “refugee” camps detaining children and keeping them away from communist influences rather than a place to nurture and educate future citizens. The government admitted to the problem of malnutrition among these pupils but no measure was devised to address the problem (Hong Kong Government, 1965). Apart from learning some basic literacy and numeracy, people did not expect these rooftop students to be promoted to the secondary education. In fact, according to the Ten-Years Plan on Primary Education in 1954, only 15% primary school graduates got a place either in the government or subsidized secondary schools (Sweeting 1991).

To many parents, these rooftop primary schools were like the hatching cubicles in the farms. At the completion of a rooftop education these children would be sent away to the factories once they were physically strong or old enough. Apart from a lucky few, most graduates in these schools terminated their study at primary 6 at the age of about twelve years. Without any prospect of further education, academic work was not a serious consideration for the teachers, the parents, and the students alike. Thus the rooftop schools represented the government’s ad hoc attempt in providing temporary or transitional primary education for a menial world of work. It took a while for the British colonial government to recognize and accept the fact that the children and their refugee parents were “citizens” of Hong Kong and to accord them the right to proper education.

So in 1950s Hong Kong, the British colonial government constructed the glamorous government primary schools on one side, the shabby rooftop schools (all of them were government-subsidized) were also produced in mass. Unfortunately, it was the shabby rooftop schools, not the glamorous government primary schools, which provided the great majority of primary school places.
The rooftop schools in the 1950s set a pattern for decades to come relating to building primary schools: building primary schools was not an idiosyncratic and independent adventure. It was a standardized factory-type mass production and was the by-product of the massive low-cost public housing programme. Also the school premise would be barely equipped but temporarily fully utilized through bi-sessional, and in some cases, tri-sessional structure. Until today, six years after the coming of the new government, converting all bi-sessional primary schools into whole-day primary school is still a remote ideal. Finally, the primary school designers and primary school users had little meaningful communication and the school design input from the latter was minimal.

3. The matchbox estate primary schools: mid-60s
In 1965, the government published the White Paper announcing the provision of six years free primary education to all Hong Kong children. Accordingly, the matchbox estate primary schools were built along with the massive public low-cost housing construction. The twenty-four-classroom school was a six-story single block attached to the nearby public housing development. On each floor, there was a central corridor and three classrooms on each side. Designed without any acoustic consideration, pupils could easily hear what were going on in adjacent classrooms. The central hallway was gloomy and narrow. Better than the barren rooftop schools, four extra rooms were provided for music, art and craft, library, and medical care. Similar to the previous rooftop stage, quantity, not quality was the top consideration. Thus, these schools were barely equipped, much like the early Ford model-T -- a vehicle that can provide basic transportation but nothing more. The whole school was not decorated. Most classrooms were equipped with chalk and board only. Lighting was sufficient but aesthetics was not a consideration. The classrooms were poorly ventilated for the hot summer days typical of Hong Kong.

Like the rooftop schools, the goal of these matchbox schools was also to fuel Hong Kong factories with adequate person power. Under the “pedagogy of the oppressed”(Freire, 1970, et al.), the whole curriculum was geared to preparing pupils for the Secondary School Entrance Examination (SSEE), in which students were tested on their knowledge in English, Chinese, and Mathematics for further education opportunity. So the match-box school design was sufficient to meet the need of the day: No courtyard, garden, or even potted plant, was necessary to arouse pupils’ interest in the nature; no laboratory of any kind was needed for conducting scientific exploration; no gymnasium was needed for pupils’ physical training; no library was needed, for the few textbooks were enough; no school hall was needed for any school-wide activity; and no technical workshops or home-economics rooms were needed to meet the pupils’ vocational need. The music room was barely equipped, and the teaching aids for other subjects were scant or non-existent. Each classroom was fully packed with an excess of forty-five pupils (Hong Kong Government, 1965). The staff rooms were too congested to leave space for any meaningful communication between the teachers and their pupils. Finally the bi-sessional operation of the school premises left no opportunities for schools to organize any extra-curricular activities after school. So in short, the exam-oriented, elitist approach in primary education leave the social, emotional, aesthetical, physical, vocational needs of the pupils neglected in these match-box type estate schools.

At any rate, the matchbox estate primary schools reconfirmed the previous practice that building primary schools was a by-product of the massive low-cost public housing development. Instead of converting the rooftops into schools, the primary schools and the low-cost housing were built simultaneously. Instead of an ad hoc measure, the primary schools were systematically built. Unfortunately, the schools were built to meet the minimum educational needs of the day, not the holistic needs of the children in the future.

4. The stand-alone estate schools: Mid-70s
In mid-70s, the stand-alone estate school came into being. It was still a multi-story single block in matchbox shape with 24 classrooms. Later when the demand for school places increased, the ground floor was converted from covered playground into classrooms, making a total of 30 classes crowded in a single block. The bi-sessional structure aggravated the congestions. Compared with the previous rooftop and matchbox models, the stand-alone school size was a bit bigger and with better interior furnishing. For instance, the cement floor was covered with tiles and classrooms walls were painted. The school premise was detached
from other public housing premises. Instead of a central corridor with classrooms on both sides, there were six classrooms in a row on each floor. These schools were better furnished. There was an assembly hall on the second floor, which also served as the gymnasium for the Physical Education lessons. A small medical room, a conference room, and a storage room were available. The number of pupils in each class was reduced first from forty-five to forty and then to thirty-five. For the schools that adopted the Activity Approach, similar to the progressive education in the West, the class size was reduced to 30. However, the school had to share the playground with the nearby residents for the Physical Education lessons. With the provision of universal nine-year compulsory education in 1978, the mass-oriented education was replacing the former elite-oriented one.

However, the Hong Kong primary school designs of the 1970s still reflected the deficient concept of education. The school was no more than a solid block structure. The rigid structural classroom design allowed no flexible use of the floor space and troubles always popped up with nearby residence nearby when using the playground. Without the provision of garden or laboratory and other structural impediments, learning activities other than those didactic ones were difficult to organized.

Like the schools in matchbox and rooftop settings, the concept of education focused on mastery of traditional school subjects through traditional teaching methodologies, particularly textbook learning. The teacher-student ratio was still high. Beside the bi-sessional structure, the layout, facilities, and equipments of the school did not facilitate teaching strategies other than "chalk and talk." Project work, group discussions, experiments, or role-play were difficult to arrange in such classroom, not to mention the organization of extra-curricular activities, guidance and counseling, remedial classes or home-school cooperation for the students after school. Education was still conducted through the factory model and teaching was no more than transmitting knowledge from the textbooks to the students in class. Individual differences were ignored. The aims of education still biased towards the rote learning, although the child-centered approach was loudly promoted after the setting up of the Curriculum Development Council. During this stand-alone estate school era in Hong Kong, the physical, social, moral, and aesthetical developments of the children were no more than rhetoric to the government. The various curriculum reforms initiated by the setting up of Curriculum Development Council in 1972 were difficult, if not impossible, to implement in these schools (Chung, 1996).

5. The flex-type schools: 1980s-1990s
The “flexi-design” came into being in early 1980s. Hong Kong population statistics at that time revealed that the demand for primary school places would soon be taken over by the demands for secondary places when the population cohort moved up the pyramid. Consequently a new standard was developed known as the “flexi-design” which allowed primary schools to be quickly and economically converted into secondary schools, according to the retired official. For the first time, the space and size of a primary school premise is comparable to a secondary school. The traditional single block match-box like design was replaced by three blocks arranged in “U” shape” or “L” shape. In addition to thirty standard classrooms, there were four special rooms, three preparation offices, and three remedial teaching rooms. After 1997 when the new government spent more money in basic education, these rooms were retrofitted into supportive rooms, education rooms, music room, art & craft room, general studies room, multi-purpose room, computer-assisted learning room, language room, and even a library, according to the retired official..

For the first time, since the 1950s when the government primary schools were first built in Hong Kong, the government provided a truly self-contained modern primary school, a school having its independent school building, a school campus, and an open playground. Most important of all, whole-day schooling replaces bi-sessional schooling. Only such school design lives up to the affluence of the Hong Kong economy. In fact, the initial government sponsored U-shaped primary schools built in the 50s were of modern standard. It is a pity that for three decades our children learned in defective rooftop, match-box and estate schools. Due to its flexi- and transitional nature, the primary school design still indicates the low status of primary education as compare with the secondary education. Secondary education was and is regarded as more prestigious and thus could demand more space and larger campus. Rote learning in the form memorizing factual knowledge in the textbooks has long dominated the basic education. The ultimate valuable was not the child himself, but the academic subject knowledge as stated in the textbook. Such knowledge could be used as currency to be exchanged for a place in the university. In line with this concept, primary school
teachers were mostly the graduates from the two-year diploma teacher education program in local college of education, not the three to four years degree level university education. The subject knowledge they gained in the college of education was sufficient for them to teach in the primary school, because education was regarded as no more than transmitting the subject knowledge from textbook into the pupils’ mind.

6. The millennium schools
With the end of British colonialism in Hong Kong, the return of the sovereignty of Hong Kong to China, and the coming of the information age, the new government reverted the colonial policy of placing top priority on tertiary education. Primary education received much greater attention. Apart from deleting the colonial influences in the school syllabus, the new government ambitiously provided brand new curriculum to the children. In proposing the “Learning to learn” curriculum reform in the first decade of the new millennium, the government aims at producing adequate personpower for the information age. This is important as the Hong Kong economy has been undergoing restructuring from secondary production to tertiary production. Education at all level, including the teacher education, should meet these challenges and the importance of primary education is recognized and accorded comparable resources with secondary education. The changing primary school design reflects such change.

In any case, to cope with the changing world and the subsequent changes in curriculum, primary education now receives its overdue share of attention from the new Hong Kong government. For the first time, the physical space provided for primary school is almost equal to that of the secondary school. Primary education now has equal footing with the secondary education and is no longer viewed as being junior and thus inferior. The Y2k schools are bigger than all the previous models. The three-block premise could be arranged in different shapes and primary schools built according the suggested needs of the stakeholders. Thus, for the first time, primary schools will not be built to look identical to each other. They are allowed different shapes and different colors. More special rooms are provided including computer learning rooms, computer preparation rooms, language laboratories, conference rooms, multi-functional rooms, and discipline master offices.

Also, for the first time, the users of the school are involved in the design process and they do not need to contribute any money for the construction. In the British colonial days, the aided schools which were largely run by religious and charity bodies were asked to contribute a certain portion of construction cost. The rate was about fifty percent during the era of rooftop schools. It was reduced to 10 % for the stand-alone schools. In any case, the stakeholders had no right to make any structural or non-structural changes to the school premise, no matter how minor they were, before moving in. In fact, the school stakeholders would not be informed of the particular school building even being granted until the last moment. Since the return of Hong Kong in 1997, the government now shoulders all capital expenditures related to school construction. Now, according to the government’s Chief Architect, the government notifies the school running body regarding the school they will receive before construction begins. The school body then has time to make suggestions on the design of the school.

Conclusions:
Differential school design philosophies reflect the differences in the ownership of sovereignty. For instance, in North America, “our planners saw childhood as a period of life in which learning, and the joy it affords, is a central goal” (Hebert, 1998, p.69). The Americans’ fundamental design philosophy, “child development as a personal quest”(Ibid.), does not find its counterpart sprouting in Hong Kong until the end of the colonial era, as demonstrated in the designs in this study. This study on the designs of primary schools in Hong Kong reflects that:

1. Both the British colonial and the new Hong Kong government placed great emphasis on education. The former stressed on the control of the provision of education because of her low legitimacy in the eyes of Britain. Education existed to serve the running of the colonial government. Thus university education, not primary education, received much greater attention. Investment in basic education was minimum as reflected by the different types of school buildings. The colonial government aimed at meeting the minimum expectation of the population with the provision of lowest cost primary education. Thus it was quantity and education of the masses, not quality of
education that counted. Thus, the bi-sessional rooftop primary schools built in the mid-1950s signified the shift of the British colonial government’s change of policy from building exemplary primary schools for the elite to building low-cost primary school for the masses. Such policy did not change until the last days in the British colonial rule. At any rate, given the growth of local economy and the rising standard of living, this study illustrates well that the designs of primary schools have been undergoing successive improvements during the second half of the last century.

2. In Hong Kong, the building of primary schools was not an independent or idiosyncratic project. In line with the socio-economic development, the construction work itself was a by-product of the massive low-cost housing program. The primary schools and the low-cost housing were built simultaneously. No matter in terms of outlook appearance or internal facilities, these estate primary schools reflect its low status with the adjacent low-cost public housing.

3. The low status of primary education during the British colonial days was also reflected in the provision of teacher education. From the 1960s onward, a degree was a standard for any primary school teacher in Britain and in America. But in Hong Kong, it was not until 1992 that the British colonial government proposed the setting up of the Hong Kong Institute of Education. By combining all the existing teacher-training colleges at the Hong Kong Institute of Education, all teacher education programs could be gradually upgraded to degree level. After the return of Hong Kong, the new government was quick to announce the target of the provision of an all-trained and all-graduated primary teaching profession.

4. In school facility planning, there is a reinforcement of the saying that “Function dictates the form” (Chan, 1996. p.14). The rooftop and estate schools represented the technical rationality in the government design of primary school. The early designs stressed maximum output at minimum cost without due consideration to the type or quality of education provided. Standardization and centralized British colonial government control were the means. The decision-making was autocratic. Lack of communication between the designers and users of primary schools was one-way in which conformity and compliance ruled the people. The technical rationality was successful in providing sufficient places in time to accommodate the gigantic increase of children and no child was left without a school place. Economically and financially such mentality proved to be efficient. However, without meaningful input from the schoolteachers, students, parents, scholars and other stakeholders in education, the designs of these school buildings, particularly those earlier types, leave much to be desired. Such mentality also reflects the relationship between the rulers and the ruled under the colonial government. Only under the new government does the school design bears some features of the Information Age. Such features include: customization, cooperative relationships between the designers and the users and the latter can share some decision-making. It also reflects the changing relationships between the government and the school-running bodies.

5. The unsatisfactory primary school design may not necessarily reflect the “evil” nature of the colonial government. Rather it was a result of bureaucratic structure in education. In the
U.K. or in America, the local education boards run many schools and the schools are funded by the local rate. Thus, the school design can readily meet the expectation of the school users. In Hong Kong, the top-down hierarchical bureaucratic structure impedes harmfully the meaningful communication between the designers/builders and the school users, particularly during the colonial era.

7. Recently, the concept of primary education has been changed. A number of measure have been taken to make primary education comparable to the secondary school education. These include expanding the school size of primary school comparable to the secondary school, upgrading the primary teaching profession to all-trained and all-graduate as in the secondary school, the elimination of bi-sessional structure and so on. The status of primary education is no longer viewed as an inferior to the secondary education.

To remedy the deficiencies in the old models, the rooftops schools were phasing out during the late 1960s. Similarly, many match-box estate schools attached to public housing have been demolished. For the rest, including the stand-alone estate schools, new teaching blocks were constructed and attached to existing blocks. In addition, more facilities and equipments were provided such as computer room and language room. Finally, the new Hong Kong government has determined that by the year 2007 all bi-sessional primary schools programs will be replaced by whole-day programs.

In years to come, new schools will continue to be designed in Hong Kong. Of particular interest is the idea of building school villages. While the trend in the past has been to construct bigger and bigger schools, is it now the right time to think differently? Can “Small is beautiful” be applied to Hong Kong?

At any rate, the re-constructed and the newly built schools provide good groundwork for Hong Kong education in the Information Age. The efforts of various stakeholders, particularly the teachers, hopefully should determine the full utility of Hong Kong schools.

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Author

CHUNG, Chak, Lecturer,
NGAN, Ming-yan, Lecturer,
Dept. of Curriculum and Instruction, The Hong Kong Institute of Education
(Received: 22.8.02, accepted 8.10.02, revised 15.10.02)
Emails: cchung@ied.edu.hk, myngan@ied.edu.hk