Design and technology in Hong Kong: Good-bye colonialism, hello China!

RESEARCH

Kenneth S Volk

The Hong Kong Institute of Education

Yeung Kai Hing

The Hong Kong Institute of Education

Siu Kin Wai, Michael

The Hong Kong Polytechnic University

Abstract

This paper explores the current practice of design and technology in Hong Kong, based on an approach that, for many years, mirrored the programme used in Great Britain. It focuses on how changes in the economic, social and political climate have affected the design and technology syllabus and programmes.

Specifically, this paper explores the colonial influence on Hong Kong's educational system and how vocational/technical education was introduced, eventually leading to the implementation of design and technology programmes. Features and issues relating to the current design and technology programme are next outlined. Finally, with the new government and resulting policy changes that will naturally influence education, three scenarios for the future of design and technology in Hong Kong are presented.

Introduction

The mission of any nation's educational programme should reflect the economic, social and political interests of its people. In many ways, however, Hong Kong is atypical, given that for so many years the design and management of its influential components were outside the direct control of the local population.

In 1841, sovereignty over Hong Kong was given to Great Britain. Since that time, Hong Kong's educational system has been inextricably linked to its colonial master. For instance, as noted by Sweeting (1990), the policy of emphasising English as the medium of instruction reflected the increasing demand and need for language proficient 'white collar' workers. Sweeting further suggested that the Hong Kong government's "bureaucratic control mechanism", starting with the first Education Director in 1913 (not a trained teacher or university graduate), became the impetus for the later development of notorious regulation and inefficiency (p. 196). As a more recent example, the relatively recent subject of design and technology essentially mirrored the programme that existed in the UK. This situation of transplanting systems from the colonial 'master' also pertained to other areas of Hong Kong's education, including content and structure.

On July 1, 1997, China resumes control of Hong Kong. Already, signs are appearing that changes in economic and political systems will necessitate changes in the educational system. For instance, the progressive relocation of Hong Kong's local industry to border industrial zones in China has reduced the number employed in manufacturing from 898,947 in 1983 to less than half as much in 1995 (Cheung and Sze, 1995). Despite this economic migration and resulting shift to a service economy, Hong Kong continues to rely on a design and technology syllabus developed in 1983, which in many ways continues to reflect a craft tradition. Exactly how the design and technology syllabus and programme are altered and adapted to reflect Hong Kong's changing economic, social and political times is the focus of this paper.

Colonial Hong Kong

The success of Hong Kong is legendary. Above a nearly-barren rock, Hong Kong has risen from a group of small fishing villages to become a world-renowned and respected centre of economic activity. Controlled by Britain since the Opium War, Hong Kong has experienced its own rules of social order and governance, as well as unique opportunities for capitalist expansion. However, as noted by Chan and Postiglione (1996), the resulting economic miracle was not without a price.

> "Hong Kong's developmental experience is worth emulating. Yet, its free trade, market economy and open society have been in stark contrast to its lack of full-scale, genuinely democratic form of government. In this sense, its prosperity and stability within the context of freedom without democracy have been the hallmarks of British colonialism – indeed, the colony is a remarkable case of borrowed place, on borrowed time, and with borrowed people." (p. 3)

The effects of British colonial influence on education have been noted by Lee and Bray (1995). According to the authors, colonial education was elitist, encouraging only a

few primary school leavers to proceed to secondary schools. This was certainly the case in Hong Kong until only very recently when a dramatic expansion of tertiary education occurred. Lee and Bray also asserted that colonial education was designed for colonial development and the promotion of a harmonious society. In this manner, education was never intended for the mission of placing the colonised on equal political ground with the colonisers.

Overview of Hong Kong's educational system

The structure of the educational system in Hong Kong is based on a nine-year compulsory education policy. That is to say, every child must receive a six-year primary as well as a three-year junior secondary education. Figure 1 shows the current educational system.

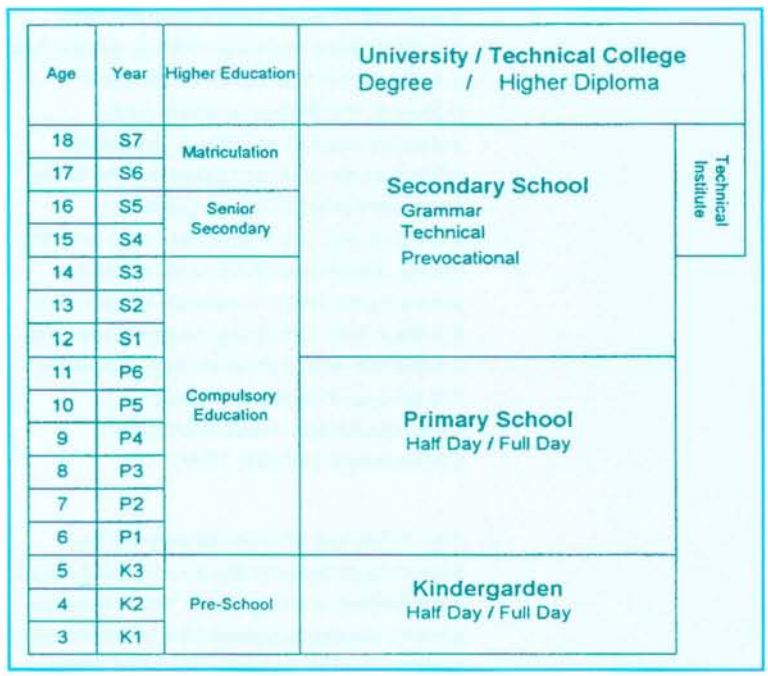

Figure 1: The Current Education System in Hong Kong

In this small city-state, education is centrally-controlled by the Education Department and is almost entirely financed by the government. Voluntary contributions from private or charity resources constitute a relatively small proportion of the total spent on education. Government-aided schools receive grants to meet recurrent costs based on student enrolments and staffing requirements.

Primary education begins at age six. Secondary education is of three to seven years' duration with grammar (academic), technical or commercial, and pre-vocational bias. Seven technical institutes managed under the Vocational Training Council (VTC) provide training in a wide range of technical subjects for students who have completed S3, S5 or S7 courses.

Vocational/technical education – a historical perspective

The year 1932 can be considered the beginning of technical education in Hong Kong, marked by the appointment of an officer from England especially for the purpose of establishing of a junior technical school (Hong Kong Education Department, 1952). The Junior Technical College was soon opened, followed by a Technical College. The Junior Technical College provided four-year secondary technical education for students completing Primary 6. The courses included pattern making, technical drawing, furniture making, metalwork and shoemaking. The training provided was specifically designed to prepare youths for apprenticeships in factories and for concurrent study in the Technical College's evening classes. As very few students at this time had the opportunity to continue education beyond Primary 6, the Technical Colleges were a significant step in educational opportunities.

During the World War II, the buildings of the Junior Technical College and the Technical College were looted and all equipment removed (Hong Kong Education Department, 1948). Technical education was at a standstill for some time after the war because the shipment of equipment from England took several years. However, during the early 1950s, technical education in Hong Kong was again re-established. A junior technical school and a technical school for girls were also introduced at this time.

During the 1960s to 1970s, a number of initiatives were introduced or recommended for the vocational/technical programmes. These included increasing the number of schools, school re-alignment and a common core of subject matter (Hong Kong Education Department, 1974). Pre-

vocational schools were a new concept, providing basic technical skills to around five percent of the total Form 1-3 students. However, the degree to which such initiatives were successful is debatable. What can be observed today are the three secondary programmes – grammar, technical, and pre-vocational – with only the former concentrating on those students preparing for further university studies. For the latter two, conditions, student/staff ratio, equipment, and curriculum have generally not lived up to student or public expectations and needs (Curriculum Development Institute, 1997).

The 1970s can also be considered the beginning of modern design and technology programmes in Hong Kong. Two influential position papers suggested the need for such a component in schools. The 1974 White Paper (Hong Kong Education Department, 1974) recommended that design and technology be a component in general education. The 1978 White Paper went even further, recommending nine-year compulsory education up to Form 3, with design and technology facilities being provided in all new schools (Hong Kong Education Department, 1978). At this time, enthusiasm for the subject was relatively high, given government assurances for curriculum and facility support. But the enthusiasm soon waned as traditional approaches of woodcraft and metalworking continued. The 'old wine in new bottles' syndrome was evident as the subject evolved into either design and technology with a wood bias, or design and technology with a metal bias. Furthermore, the subject was never fully introduced in all schools, despite recommendations.

Influences on the current design and technology programme

Design and technology in Hong Kong is currently influenced by many factors including a dated syllabus, inadequate facilities, poor public perception, lack of new design and technology teachers being recruited, and the inability of a wide range of students to participate fully in the programme. These influences are not necessarily unique to Hong Kong or other nations' design and technology programmes, but for Hong Kong they may severely limit the subject's future change and growth, given the certain change in government and potential change in educational emphases.

The design and technology syllabus for lower secondary grades can be considered dated, having been published in 1983 (Curriculum Development Committee, 1983). Despite the claim that the syllabus "proposes a major development in the materials-based subjects – woodwork and metalwork... and a move away from work narrowly concerned with the appreciation of manual skills" (p.5), the subject continues to rely on such an approach. Basic skills obtained through the use of hand tools to saw, plane, drill and fasten are heavily emphasised. Class sizes, averaging around 40, prevent anything but repetitive and prescriptive exercises from being utilised. In this manner, traditional design and technology activities and projects such as making key rings and bookends remain standard in many schools.

Facilities have also not changed significantly from the earlier woodworking and metalworking concentrations. To this end, they reflect the bias in the end-of-course test. For instance, in the Certificate Examination (CE) at the end of five years of design and technology study, basic woodworking machinery and hand tools are the exclusive technical domains. Siu (1994) further noted that teachers' focusing on preparing students for the CE examination did not contribute to a good or complete learning experience for design and technology students. Despite rhetoric to integrate a wider range of materials, processes and subjects in design and technology (Curriculum Development Institute, 1996), changes have been negligible.

The public continues to have a very limited perception of design and technology. As noted in a study conducted by Chow (1996), pupils, parents and even school authorities view the subject as having no great value. Parents still associate the subject with traditional skill training, and when their children have the opportunity to select elective subjects in Secondary 4, they suggest or insist that their children select other subjects such as science or art. With

over 250,000 students in Secondary 1-3, few continue studying the subject beyond this grade as an elective. For instance, in 1995, a total of 123,945 CE examinations were taken by S5 students, but only 654 were for design and technology (Hong Kong Examinations Authority, 1995).

As in other countries (Banks, 1996; Eggleston, 1995; Volk, 1993) preparing an adequate number of new design and technology teachers who are enthusiastic and well-versed in concepts, equipment and methodology has been a recent problem in Hong Kong. According to Fung (1992), an average of 27 full-time students were being prepared to be design and technology teachers each year during the 1980s. Since that time, the numbers have fallen off dramatically; so much so that in the first two years of the newly-established Hong Kong Institute of Education (which now prepares all design and technology teachers), less than six new design and technology teachers graduated each year (HKIEd, 1996).

The lack of new design and technology teachers being prepared brings out two problems. First, principals use the unavailability of design and technology teachers as an excuse to close the subject or rearrange resources for other subjects such as computers. Second, principals may employ non-qualified teachers, such as university graduates from engineering programmes, resulting in the possible reduction of programme quality.

The last factor, which perhaps applies more to Hong Kong than many developed countries, is the inability of a wide range of students to fully participate in the programme. The three main reasons for this lack of access are banding, language issues and gender bias in student scheduling.

Banding is the policy of distinguishing what specific school a child attends, based on academic performance and ability. Schools are designated by 'bands' with band 1 being the highest, and band 5 being the lowest. During the Primary 5 and 6 years, students take tests on subjects such as Chinese, Maths and English. Based on the results of these tests, as well as other factors, opportunities for admission into a specific school are determined. Although the 'band' of each school is supposed to be for internal education use and not public information, parents and newly-assigned teachers seem preoccupied with the band of a school. No doubt students' mental, psychological and emotional growth are affected by banding, as well as a 'Pygmalion effect' regarding teachers' expectations and attitudes toward their 'labelled' students.

For design and technology, banding influences the ability of all students to fully participate. Normally the lower band schools will offer the subject, while higher bands schools may not. The latter believe the subject is not 'academic' and therefore not important or relevant to assumed post-secondary studies. In this manner, the craft-based, non-essential, non-academic perception of design and technology is perpetuated.

Language issues are another area influencing design and technology in Hong Kong that may be different than in other countries. While students and teachers often opt for English medium secondary education, problems arising from the growing use of 'mixed code' (mixing of Cantonese and English) by teachers and students have recently begun to be addressed. The Education Commission Report No. 4 (Hong Kong Department of Education, 1990) encouraged each secondary school to adopt a firm policy on its medium of instruction. In this manner, either English or Cantonese were to be used, not both.

For design and technology classes, language issues have created problems. As a majority of text books and technical manuals are written in English, there is great difficulty in not having instruction use mixed code. Should the class be conducted in English, often explanations of terms and procedures might be better comprehended in Cantonese. If the class is held in Cantonese, then resource material is often written in English. Problems also arise from those classes and exams conducted in English where students have poor English language skills. To address some of this

potential handicap, CE examinations for design and technology have recently been offered in both languages. The trend since this policy has been initiated indicates an increase in Cantonese tests being requested and a decrease in English (Chow, 1996).

Gender bias and not having all students participate in design and technology activities is based on a combination of cultural and structural conditions. The former is obviously a result of years of tradition and difficult to change. The latter reflects educational resources and perceived priorities, thus possible to influence. Although a majority of schools offer design and technology to boys, and girls take home economics, some are now beginning to allow girls the opportunity. However, school principals continue to find scheduling easier with limited options. As far as design and technology teachers ae concerned, there are very few female role models to encourage wider participation. Most recent figures available indicate there are only 3 females out of the 369 total design and technology teachers in Hong Kong (Hong Kong Education Department, 1991).

Preparing design and technology teachers

The Hong Kong Institute of Education (HKIEd) is a newly-established entity, combining the five former colleges of education that are located throughout Hong Kong. Prior to HKIEd's establishment in 1995, design and technology teachers were prepared at the Hong Kong Technical Teachers' College. The Department of Engineering and Technology Studies (ETS) within HKIEd now houses this programme area. Although the same facilities are currently being utilised as before, plans are underway to modernise and update the course and facilities.

Most notable of these plans is the new Tai Po campus being built north in the New Territories. This state-of-the-art campus will house all programme areas and students currently located in separate campuses. As the new campus was originally planned by the Education Department before the Institute's current staff was recruited, it was evidently intended to maintain the status quo. This was demonstrated by the original plan to have the ETS facility reflect a traditional skills-centred approach; thus, the five workshops included woodworking, metalworking, plastics, electricity and drafting. So unimaginative was the planned design and technology facility that the drafting room included only board drafting, as computers are not mentioned in the current design and technology syllabus.

The establishment of HKIEd allowed former Education Department instructors to decide whether or not to continue, thus enabling a sizeable number of new lecturing staff to be recruited. For ETS, this resulted in 10 of 13 members being new. One major result of this change was a re-examination of programme philosophy, courses and facility needs. Soon, it was agreed that the proposed model for Tai Po would not suffice, and a new plan was developed. The new facilities for preparing design and technology teachers would now reflect a philosophy based on subject integration, rather than segregation; new technology, rather than old; and an exploration of design and creativity, rather than a simple mastery of skills.

Some of the changes planned for the new ETS facility include a 3-D studio, combining wood, plastics and metals; a system technology lab, introducing a variety of 'modular' activities for all HKIEd students as well as school children; an electronics lab containing control technology and hydraulics/pneumatics; a graphics lab with networked computers and a variety of software; and finally a manufacturing lab with flexible manufacturing and robotics capabilities. Obviously, there is utmost confidence that this new design and approach will drive the programme, and in turn, influence the perception and direction of design and technology in Hong Kong.

The future of design and technology in Hong Kong

Since the *only* certainty after July 1, 1997 will be that Hong Kong has a new political 'master' under the 'one country-two systems', it is premature to speculate on how the economic, social and educational realms will be changed. Factors such as

potential changes in taxation, restrictions on speech, and the certain arrival of new immigrants from the Chinese Mainland will no doubt affect education initiatives.

For design and technology, there seem to be three possible scenarios: (a) a change in education which more reflects the educational system, content and approach used in China, (b) total autonomy which enables new initiatives to freely occur, or (c) a slow steady-state of minimal, if any, educational change.

Should the educational system change to reflect Chinese practice, several issues arise. As noted by Postiglione, the dilemma of building an educational system that reconciles "the ideological contradictions between capitalism, socialism, and patriotism" will be of major concern (1996, p. 118). Leung (1996) further cautioned that even the current policy which internationalises and democratises the schools may be challenged by initiatives designed to inculcate Chinese 'patriotism' in students.

Under this scenario, design and technology would need to refocus some of its content. For instance, a study of economic and social injustices brought on by colonial expansionism may have to be included. Taken to a more-concrete level, even simple identification of tool names may reflect a Chinese, rather than English bias. Should the programme mirror the approach used in China, an emphasis in manual skill development as a major focus of technical courses would no doubt occur.

Total autonomy is another possible option. As outlined in the *1984 Sino-British Joint Declaration*, Hong Kong's existing legal, economic and social systems are to be preserved for 50 years. Furthermore, under the Special Administrative Region (SAR) designation for Chinese rule and the *Basic Law* which codified the constitutional framework, a high degree of autonomy with "Hong Kong People ruling Hong Kong" was guaranteed.

For design and technology, autonomy would allow initiatives such as the new design and technology programme and facilities proposed by HKIEd to act as a catalyst for public school change. In this manner, the bureaucratic mechanism which has become such a part of Hong Kong's education system may diminish due to lack of foreign control. Secondary school design and technology programmes have, for a long time, been dominated by a prescriptive syllabus and exam structure. Perhaps a relaxation of these restrictions would allow individual schools to propose and develop new alternatives, as is currently being done within the teacher preparation programme at HKIEd.

The third scenario would present a state of minimal, if any, educational change. As noted by Cheng (1995) primary and secondary education in Hong Kong has come to a steady state. Thus, one would expect little change in terms of size and structure. Perhaps a serious result of this steady state and impending uncertainty of political change is the 'implementation crisis', or the inability to implement what is promised by new policies (Cheng, 1995, p. 461). Despite the past successes of 'White Papers' during the 1970s and 1980s, there has been questions as to the success of new initiatives such as Target-Oriented Curriculum, similar to outcomes-based education; the Medium of Instruction Grouping Assessment, intended to eliminate mixed-code; and the Council on Professional Conduct, designed to improve teacher professionalism (Cheng, 1995). In many ways, this 'implementation crisis' is similar to Lee and Bray's (1995) "deadline effects", in that this particular time in Hong Kong's history has had a profound influence on the ability to initiate change. Furthermore, it may be possible that should any change be proposed, it would be met with scepticism by the public and teachers as to the motives or intended outcomes.

For design and technology, the steady state scenario would no doubt lead to the continued decline in public perception, programme development, facility improvement and teacher morale. As recent trends suggest, a lack of change would not bode well for the subject area. Steady state would lead to the subject being devoid of purpose, direction and advocacy. Perhaps

this scenario would only be preferred to a return to the more manual skill development approach currently advocated and practised in Chinese technical education programmes.

Concluding remarks

Hong Kong is a society shaped by economic forces, designed by and reflecting technological advancements, and managed by outside political forces. All of these are beyond the direct control of its society. However, despite the uncertain future of economic and technological change, Hong Kong's certain political future will no doubt affect its educational system and programmes.

For subjects such as design and technology, any change may, in fact, be slow. One thing is for certain; economics and technology will continue to act as a catalyst for change in the goals, content, and approach of design and technology. To what degree the end of Hong Kong's status as a British colony and beginning of China's new control influences this process is yet to be seen, for saying 'good-bye' and 'hello' often has the potential for uncertainty. No doubt the upcoming farewells to Great Britain and greetings to China will be no different.

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