

**KEY POLICY ISSUES IN THE PROMOTION OF
INFORMATION TECHNOLOGY IN VOCATIONAL EDUCATION:
SOME LESSONS FROM THE FIVE-YEAR STRATEGY IN HONG KONG**

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Abstract: In this information era, the promotion of information technology (IT) in education has become an important agenda for governments all over the world. In June 1998, the Hong Kong Government of the Special Administrative Region (HKSAR) published a policy document entitled “Information Technology for Quality Education: Five-Year Strategy 1998/99 to 2002/03” as a blueprint for the promotion of IT in education. Despite the commitment and financial support provided by the HKSAR government, several problems have been identified in the policy plan and in fact, have emerged in the course of its implementation. This paper applies four key policy evaluation categories – namely, technical feasibility, political viability, financial feasibility and administrative operability to suggest ways for improvement and to explain their relevance in promoting IT in vocational education.

INTRODUCTION

In his maiden Policy Address to the Legislative Council in October 1997, the Chief Executive of the Hong Kong Special Administrative Region announced the launching of a five-year strategy to promote the use of information technology (IT) to enhance teaching and learning. In view of the extensive nature and the large amount of resources that have been promised to achieve the plan, it is important that the preconditions for effective implementation have been sufficiently considered. However, since the policy strategy was launched, several problems have emerged that undermine the goals and effectiveness of the strategy. This paper aims to make a critical evaluation of the Five-Year Strategy through a policy analysis perspective and a comparative approach that focus on relevance of objectives and implementation issues to provide insights on promoting IT in vocational education. The four essential evaluation criteria in policy analysis are namely: technical feasibility, political viability, financial feasibility and administrative operability. Through the application of these four evaluation criteria, some practical suggestions are made with regard to the planning and implementation of strategies in promoting IT to bring about desired learning outcomes.

PROMOTING INFORMATION TECHNOLOGY IN EDUCATION

There has been an exponential growth in the use of communication and information technology in the past decade or so. But Hong Kong has lagged behind other advanced countries in developing a coherent policy in response to the technology revolution. In recognition of its tremendous impact on people’s daily lives and the need to catch up with other advanced countries, the Chief Executive stated in his first Policy Address of 1997 that Hong Kong ‘should aspire to be a leader, not a follower in the information world of tomorrow’. Since education plays a key part in the pursuit of this important goal, he has pledged to formulate a five-year strategy for the application of IT in

promoting the effectiveness of teaching and learning. In June 1998, a formal document entitled 'Information Technology for Quality Education: Five-Year Strategy 1998/99 to 2002/03' (hereafter called the Five-Year Strategy) was published as a blueprint for the collaboration among the Government and various key players. Before the issuance of the Five-Year Strategy, the Education and Manpower Bureau has only taken piece-meal measures in providing IT exposure for students and teachers.

In the Five-Year Strategy, a vision has been set 'to harness the power of IT to help our students get the most out of school education'. To support this vision, three strategic objectives have been identified. The first objective is to arouse and maintain students' motivation to learn through the use of IT. The second objective is to broaden students' horizons, so as to enrich their learning experience and facilitate the development of a creative mind which are essential to enable students to be adaptive to changes in this global age. The third objective is to encourage independent lifelong learning and instill team spirit among students (Five-Year Strategy, 1998: para. 2). To achieve these objectives, four missions have been listed for the five-year period. They include helping teachers to settle in their new role as a 'facilitator', incorporating IT elements in the school curriculum, progressively enhancing the provision of IT facilities and educational software for schools, and building up a network infrastructure to facilitate sharing of educational resources (para. 6).

In corollary, there are four key components in the Five-Year Strategy: teacher enablement, curriculum and software, hardware provision, and network infrastructure. Teacher enablement has been identified as the most important component in the Strategy since teachers' willingness and ability to teach through IT will directly affect the successful implementation of the goals set. As for implementation, the Five-Year Plan stipulated the setting up of an advisory committee comprising representatives from the Government, the school sector, tertiary sector and IT industry to provide a steer for the Strategy and to oversee its implementation. It has been specifically mentioned that the Strategy is not meant to be implemented in a top-down manner, but schools are expected to formulate their own IT plans tailoring to their specific needs. The Plan also proposes setting attaining targets for students at key learning stages at both Primary and Secondary levels.

Although the Five-Year Strategy only applies to basic education and secondary technical schools, it has an important role to equip secondary school leavers with the essential knowledge and competence for more advanced training at vocational and tertiary levels. Technical and vocational training provides an alternative route to school leavers who may not be able to proceed to mainstream higher education programmes. In fact, it serves to train manpower for the economy at craft, technician and higher technician levels. Since technical training and vocational education occur in a number of modes and are offered by various institutions, it is less appropriate to adopt a uniform approach in promoting IT in all their courses. Nonetheless, for the Hong Kong Institute of Vocational Education (IVE) which is publicly funded and is the main provider of courses from basic craft to higher diploma level, it can draw on the experience from the Five-Year Strategy to develop a more cost-effective and practical approach to enhance its training.

FROM POLICY TO IMPLEMENTATION

Taken at face value, the Five-Year Strategy seems to be both comprehensive and attentive to relevant issues concerning the adoption of IT in education. However, as often shown by experience both locally and overseas, even the most meticulous and well-intended policy may not always be implemented as planned nor bring the desired outcomes. To ensure that the identified goals of a plan or policy can be attained, it is essential that evaluation criteria be developed for objectives set and that possible constraints on implementation be anticipated. Numerous authors (Bardach, 1972;

Quade 1975; Dunn, 1981; MacRae and Wilde 1985) have suggested categories of evaluation criteria in policy analysis and planning. The more commonly applied ones can be grouped into four broad categories: technical feasibility, political viability, financial feasibility or possibility, and administrative operability (Patton and Sawicki, 1993: 207). These categories can be briefly described as follows:

- **Technical feasibility** includes criteria that measure policy outcomes to see if they achieve their purpose. They address the basic question of whether the proposed action or strategy will work in a technical and practical sense. The two principal criteria under this category are *effectiveness* and *adequacy*. The criterion of effectiveness focuses on whether the proposed policy will have its intended effect; whereas adequacy measures how far toward a solution or stated objective we can proceed with resources available.
- **Political viability** is mainly concerned with the impact of policy outcomes on relevant power groups such as decision-makers, legislators, administrators and any affected groups. The central question is whether one or more policy alternatives will be acceptable or can be made acceptable to the relevant groups. The criteria that assess or measure political viability are often subjective and less quantifiable. The common criteria used include *acceptability* to relevant actors, *appropriateness* of policy in meshing with values of society, *equity* in terms of impact, and *responsiveness* in meeting the needs of target groups.
- **Financial feasibility** focuses on availability of funding, and considerations of costs and benefits of a policy or programme. Since any new policy will require extra resources and has fiscal implications, policy-makers must be able to justify the incurred cost and explain how proposed actions can benefit the relevant client groups or society in order to obtain support from funding authorities. In evaluating financial feasibility, there is a tendency to rely on ‘hard’ quantitative measures, but often the less easily monetarizable aspects also have bearing on the desirability and value of a proposed policy or programme.
- **Administrative operability** assesses how possible it is to actually implement the proposed policy within the political, social and, most important, administrative context. They are concerned with whether required expertise and staffing are available, whether employees will cooperate in delivering the service, and whether the necessary physical facilities are there. The common criteria to consider in evaluating administrative operability include authority, institutional commitment, staff capability, and organizational support.

These four categories in evaluating policy are inter-related and have relevance for each other. They are useful in anticipating possible constraints at the implementation stage and in assessing the appropriateness of proposed actions in meeting set objectives. In fact a comparative study by Pelgrum and Plomp (1993) on “Computers in Education in 21 Education Systems” of which the set of indicators used such as hardware availability, software availability, type of use, relevance and training etc. can also be classified under the four broad categories of policy evaluation. They are used as the analytical framework in the following section to assess the efficacy and possible limitations of the Five-Year Strategy, as well as their implications on promoting IT in vocational education.

LESSONS FROM THE FIVE-YEAR STRATEGY

(a) **Technical Feasibility** - Although the Strategy has not yet been fully implemented, an assessment of its *effectiveness* can be partly based on the experience of other countries that have adopted IT in education and partly based on the relevance of proposed measures in meeting the objectives. As found in Pelgrum and Plomp’s study (1993), hardware availability, software

availability, organizational and infrastructural support, and training are necessary for the introduction of IT in education. With reference to the three set objectives in the Five-Year Strategy, the proposed measures under the four key components such as the provision of training to teachers, IT equipment and development of educational software etc. seem to provide the essential conditions to facilitate their effective fulfillment.

However, since 'effectiveness' is concerned with whether the proposed policy will have its intended effect, many of the proposed measures only provide the necessary, but not sufficient conditions to achieve the stated objectives. This is particularly so when some of the objectives are less straightforward, and that the policy effects are longer-term and indirect. As pointed out by Roblyer et. al. (1997) and Selwyn (1998), there is a lack of hard evidence on effectiveness of IT in facilitating students' achievement and bringing desired learning outcomes. The difficulty in assessing effectiveness is further complicated by the ambivalent nature of policy objectives in the Strategy. Given the many different rationales that can be presented for introducing IT in education, it seems that the Strategy has not clearly spelt out the priority between the pedagogical function and other goals of IT¹. Its three stated objectives seem to imply that IT is inherently beneficial and is the panacea to improve education.

Although the goals of vocational education appear to be more specific in terms of providing practical pre-employment training, the incorporation of IT in teaching and learning equally involves a 'paradigm shift' from a teacher-centered approach to a more interactive and learner-centred approach. Teachers would need to play a guiding role in cultivating students' proper attitude and constructive approach towards the use of IT. In policies relating to education, human and behavioural aspects are crucial to put its intended goals into effect. More attention should be given to the user context (i.e. motivations, intentions and advantages called into play by use of technology) and cultural context (i.e. norms and values of society) of technological implementation.

(b) Political Viability - Notwithstanding the general consensus on the importance of IT in the current knowledge society and acceptance of the functions of IT in education, different sectors of the community have quite diverse views towards the Five-Year Strategy. Since the policy was initiated by the Chief Executive, it has gained wide support from both legislators, executive councillors and members of the Education Commission. However for some educational coalitions such as the Professional Teachers' Union, they are critical of the Strategy and its proposed measures despite their acceptance of the policy in principle. The major criticism of these groups is that the Strategy does not have a long-term vision and fails to give sufficient thoughts on the overall direction, objectives and institutional framework for its implementation. It is also skeptical of whether the large amount of resources allocated and to be spent within a set timeframe could be used in an efficient and cost-effective manner (Wen Wei Po, 10 September 1998).

Although school heads and teachers generally accept that the promotion of IT in education as appropriate in meeting the needs and prevalent values of society, their readiness to implement the proposed measures varied considerably due to the heterogeneity of teachers, the large number and diversity of government-funded schools. Similar to the evaluation by Bigum and Kenway (1998) of the main standpoints that educators take towards new technologies in education, there are what they called 'boosters' and 'critics' amongst Hong Kong teachers. Despite the variations in terms of acceptability amongst teachers, they are more unanimous in their general perception towards the low 'responsiveness' of the Strategy. According to the media reports and surveys conducted by various organizations, it is noted that quite a number of them regarded the Strategy as not responsive enough in catering for their psychological needs and concerns in adjustment. Furthermore, the flexibility allowed in the delivery of computers and related equipment to match

¹ Pelgrum and Plomp (1993) quoted Hawkrigde's (1990) summarization of four rationales for introducing IT in education: social, vocational, pedagogical and catalytic (to accelerate other educational innovations).

the particular circumstances of schools casts doubt on the 'equity' criterion. Usually the 'better-off' schools will have a comparative advantage in getting other technical support and training places for teachers. Another concern relating to equity is the observation supported by research that students from wealthier families are more likely to have computers and other technology resources at home than those from poorer families (Roblyer et. al., 1997: 43). The discrepancy in educational advantages and disadvantages of students from different socio-economic background may be aggravated with the growing use of IT and its integration into the curriculum.

(c) Financial Feasibility - Since the Strategy has been able to meet the two important criteria of 'appropriateness' and 'acceptability' in the political viability test, it can readily secure the necessary funding from the government. The implementation of the Five-Year Plan involves a capital cost of \$2,580 million and a recurrent cost of \$233 million per year. An annual recurrent grant ranging from \$69,000 to \$76,000 is also provided to schools depending on their size for the purchase of consumables, educational software packages and other ancillary items. Although the current allocated funding seems to be sufficient to provide a 'threshold level' of hardware to schools, training for teachers and the necessary infrastructural support, it is doubtful whether schools have the financial capacity to maintain and update software and IT facilities. In view of the fact that the present estimated required funding is mainly based on the quantifiable aspects while the less measurable components have not been adequately dealt with in the Strategy, there are concerns as to whether future financial support will be as sufficient and as readily available. To implement IT in education, it is always difficult to assess how much funding would be adequate given its expensive and fast-changing nature, and the need for maintenance.

(d) Administrative Operability – In the case of the Five-Year Strategy, the capability of existing administrative and delivery systems has facilitated its smooth implementation. There is clear authority for the Education Department to request co-operation from schools and teachers, and resources to procure equipment and recruit technical staff. In terms of institutional commitment, it is relatively straightforward for officials of Education Department to discharge their assigned tasks and to make the necessary provisions as laid down in the Strategy. But for schools heads and teachers, their commitment may be less certain since the policy requires fundamental changes in their behaviour and working style. Apart from the provision of training, to facilitate commitment and willingness of teachers in using IT would require other supporting conditions such as exposure of teachers to the potential functions and benefits of IT, availability of local educational software, technical support, including time and resources for preparation of teaching material. With regard to organizational support, the educational authorities have not provided sufficient assistance to schools in dealing with problems of insufficient space and installation difficulties due to constraints in physical setting.

CONCLUSION AND RECOMMENDATION

From the evaluation of the Five-Year Strategy, it can be seen that an effective policy to promote IT in education requires several conditions to meet the four sets of evaluative criteria. Although it is recognized that IT has a growing importance in the present rapidly changing world and knowledge society, we should be cautious of a blind faith that IT can necessarily serve our education needs better. Since education involves human interaction and even vocational education is increasingly expected to train personnel or technicians with multi-skills, more attention should be given to the human and cultural dimensions in applying IT in education. What can be learned from the Five-Year Strategy is that policy makers need to have a clear understanding of the user context to develop their learning faculties, the underlying rationale for integrating IT into the curriculum, as well as the personal and professional needs of teachers. In addition, they also need to be sensitive

to the organizational and institutional culture of agencies responsible for implementing IT in education, and the specific nature and requirements of different vocational training programmes.

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