

*Evaluation on the Implementation of
the Medium of Instruction Guidance for
Secondary Schools*

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EXECUTIVE SUMMARY

1. The Research Questions

In the summer of 1999, the Education Department (ED) of the Hong Kong Special Administrative Region (HKSAR) Government commissioned the research team to conduct a policy evaluation research. The policy was the *Guidance of Medium of Instruction for Secondary Schools (Guidance)* (ED, 1997). As stipulated in the tender document, the research was “a longitudinal research study (the Study) ... to evaluate and compare a cohort of students studying in schools adopting either Chinese or English as the MOI, with the aim of tracing and comparing the academic and personal development of students studying under each of the two media of instruction.” (Tsang, 1999, p. 1) More specifically, the research questions to be investigated are defined as follows.

- ◆ To trace the academic and personal development of students in schools adopting either Chinese or English as the MOI;
- ◆ To compare the degree of improvement of students’ academic and personal development in schools adopting either Chinese or English as the MOI;
- ◆ To compare the language ability (in both Chinese and English) of students in schools adopting either Chinese or English as the MOI; and
- ◆ To identify facilitating and hindering factors affecting students learning in schools adopting Chinese as the MOI.

2. The Study

To address these research questions, the research team designed a sample using two cohorts of students from 100 secondary schools. The two cohorts are students who entered into the secondary education system in the academic years of 1998-1999 (98 cohort) and 1999-2000 (99 cohort). These are the first two cohorts who entered into the secondary school system after implementation of the policy specified in the *Guidance of Medium of Instruction for Secondary Schools*. The 100 secondary schools were selected by stratified random sampling based on two criteria. One criterion was the Medium of Instruction (MOI) used in schools, which can be categorized English as Medium of Instruction (EMI) and Chinese as Medium of Instruction (CMI). The other was the achievement level of the student intakes of CMI schools. These levels are differentiated into three categories, namely high, medium and low. The student intake achievement level is measured by students’ Academic Ability Index (AAI) in the Secondary School

Place Allocation (SSPA) system. As a result, schools selected were stratified into four strata, EMI schools, CMI schools – high intake (CHIG), CMI schools – medium intake (CMID), and CMI schools – low intake (CLOW). 25 schools were randomly sampled from each stratum. The population is just over 400 schools, so the sampling ratio is about 25%. Sampled students' AAI were used as the students' pre-entry achievement measures in the surveys. Throughout the past three years two cohorts of students in the 100 sampled schools were tracked from Form 1 to Form 3 and studied by means of achievement tests, questionnaire surveys, focus group discussions, and classroom observations. Teachers in the sampled schools were also studied, using questionnaire surveys and in-depth interviews. Administrations of the sampled schools were also studied, using questionnaire surveys and in-depth interviews. Finally, parents of the students in both cohorts were surveyed to collect data on family backgrounds.

3. Major Findings

Based on data accumulated over the past three years, the research team designed the following analysis to answer the research questions.

3.1. Differential effects between EMI and CMI schools on Academic Achievement

To assess the differential effects between EMI and CMI schools on academic development, the research team has conducted two sets of analyses. One is a value-added analysis and the other is a growth-model analysis. Both analyses consistently reveal that there are salient differential effects between EMI and CMI schools in three academic areas. These are the learning outcomes of English language, science and social studies. Chinese language and Mathematics show no such significant differences across either forms or student cohorts.

Results of both the value-added and growth-model analyses consistently reveal that CMI schools have asserted positive effects on students' science achievement relative to students in EMI schools. More specifically, the findings in the value-added models revealed that CMI schools in all three ability strata could, on average, raise students' science achievement scores by thirty percentiles in comparison with EMI schools. In other words, CMI schools have a value-added effect on science achievement equivalent to one and a half Bands in the old 5-banding SSPA system. There was a further revelation from comparison of the science achievement scores of EMI students, tested using bilingual papers and those tested with English-version papers. This showed that EMI students tested with bilingual papers only lagged behind students in CMI schools by twenty percentiles. From this, we may infer that English classroom instruction will reduce EMI students' science achievement scores by twenty percentiles (i.e. one Band), while using English in assessment will reduce them by another ten

percentiles (i.e. half a Band). Similarly, in the growth model, it is revealed that with regard to the effects on the general achievement levels (i.e. the mean-centered intercept) of the 3-year growth in science achievement, CMI schools have a value-added effect of more than twenty percentiles when compared with EMI schools. However, there are no significant differences in growth rate (the slope of the 3-year growth curve) between EMI and CMI schools.

In the matter of the differential effects on social studies achievement, it is revealed that CMI schools have produced positive effects on students' social studies achievement compared with EMI schools. In the value-added models, CMI schools in all three ability strata can raise social studies achievement scores of students by an average of about twenty percentiles by comparison with EMI schools. In other words, relative to EMI schools, CMI schools have a value-added effect on social studies achievement equivalent to one Band in the 5-banding SSPA system. Once again, by comparing the social-studies achievement scores of EMI students tested with bilingual papers with those tested with English-version papers, it is revealed that the EMI students tested with a bilingual paper do not show any significant drop in achievement in comparison with CMI students. Once again, we can infer that the one-Band disadvantage experienced by the EMI students in social studies learning is mainly due to the medium used in assessment rather than in classroom instruction. Findings from the growth models show that in terms of the effects on the general achievement levels of the 3-year growth of social studies achievement (i.e. the mean-centered intercept of the growth curve), CMI schools have value-added effects by ten percentiles in comparison with EMI schools. However, there are no significant differences in growth rate (i.e. the slope of the growth curve) between EMI and CMI schools.

On examination of the differential effect on English achievement between CMI and EMI schools, the findings of the Study have revealed that EMI schools have produced positive effects on students' English achievement relative to students in CMI schools. More specifically, in the value-added model, EMI schools on a whole can raise English achievement scores of students by twenty percentiles by comparison with students in CMI schools in all three ability strata. With reference to the 5-banding system of the old SSPA mechanism, we can say that EMI schools have a value-added effect on English achievement by one Band in comparison with CMI schools. Moreover, findings in the growth model indicate first of all that, EMI schools have produced value-added effect on the general achievement level of the 3-year growth of English achievement by well over ten percentiles in comparison with CMI schools. The growth models have also revealed that the achievement gap between EMI schools and CMI schools with high- and medium-ability student intakes (CHI and CMID schools) will be widened. It can be evidenced in the findings that EMI students' growth rates in English

achievement are significantly higher than students in CHIG and CMID schools.

3.2. Differential effects between EMI and CMI schools on Psychosocial Development

In assessing the differential effects between EMI and CMI schools on students' psychological development, a series of multi-level regression models were conducted. In each of these models, one measure of psychosocial development of students was taken as dependent variable, while individual students' AAI, gender (i.e. being female), school-means AAI, and the three dummy variables of sampling strata were used as independent variables. The findings revealed from models recorded in Table 5.1 to 5.18 indicate that there are significant and consistent differential effects between EMI and CMI schools on several areas of students' psychosocial development. The four areas which yield significant and consistent differences are, students' academic self-concept, learning strategy, attitude towards bilingualism and English learning, and perception of the quality of school life and school choice. However, there are no significant differences between EMI and CMI students in their general self-concept and self-concepts of relation with parents, honesty/reliability and emotional stability, civic attitude and orientation, social efficacy, and learning motive.

Among the six academic self-concepts presented in Tables 5.1 and 5.2, those for Chinese and science show no significant differences between EMI and CMI students. The most salient difference appears in the academic self-concept of English. EMI students' confidence and sense of competence in English proficiency are consistently higher than CMI students' in all three ability strata and in both the 99 and 98 cohorts. Another academic self-concept, which exhibits significant differences between EMI and CMI students, is the self-concept of interest in mathematics. EMI students have expressed greater interest in mathematics learning than CHIG and CMID students at Form 3 level in both the 98 and 99 cohorts. The same variation can also be found between EMI and CLOW students in the 99 cohort.

The second area of psychosocial development, which shows significant differences between EMI and CMI students, is students' learning strategy. Among the four dimensions of learning strategy, only *Deep Strategy* has produced some significant and consistent differences. EMI students are more likely to adopt deep strategy in learning than CHIG students from both the 98 and 99 cohorts. The same result can also be found between EMI and CMID students in the 98 cohort.

The third area of psychosocial development, which produced significant differences between EMI and CMI students, is students' attitudes towards bilingualism and English learning. Among the eight dimensions of attitudes towards bilingualism and English learning, significant differences mainly occur in the four dimensions, *Interest in Learning English*, *Motivational Intensities in Schools*, *outside Schools* and *English*

Lessons. It is revealed that EMI schools exhibit significant and positive effects in all four dimensions. EMI students indicated greater interest in English learning than CMI students in both the 98 and 99 cohorts. They demonstrate greater motivational intensities in English learning in English lessons and outside schools in both cohorts. EMI students also expressed greater motivational intensity of learning English in schools in the 99 cohort.

The last area of psychosocial development, which produced significant differential effects between EMI and CMI schools, is students' perception of their school life. First, among the eight dimensions in the instrument of Quality of School Life (QSL), three have consistently produced significant differences between EMI schools and CMI schools in all three ability strata in both the 98 and 99 cohorts. These dimensions are students' perceptions of the general *Opportunity* elicited from schoolwork, *Opportunity relating to the MOI* in use in schools and students' sense of *Linguistic Efficacy* in learning. They indicate that in comparison with CMI schools, EMI schools have produced significant and positive effects on students' perceptions of both kinds of *Opportunity* but negative effects on students' sense of *Linguistic Efficacy*. This shows that HK secondary-school students face a dilemma in their schooling. Students in EMI schools feel least effective in learning with EMI and yet they hold the perception that EMI will offer greater opportunities for their future studies as well as career. Conversely, students in CMI schools in all three ability strata feel they are much more effective learners with CMI, but hold the perception that their prospects are less promising than their contemporaries in EMI schools. Second, students' perception of the choice between EMI and CMI schools reveals that a feeling of ambivalence permeates the student body in CMI schools. When students were asked what medium they would choose if they could choose freely once again, a substantial portion of CMI students indicate that they would choose EMI and not CMI schools. These positive feelings towards EMI over CMI modes are strongest among CHIG students and they decrease in descending order from CMID to CLOW strata. The majority of students in EMI schools indicate they identify strongly with their choice of school.

Apart from the findings generated from the quantitative study, the data gathered from the qualitative study have revealed that students in CMI schools have strong feelings of abhorrence towards English and view it as difficult. English teachers in CMI schools have repeatedly registered that most of their students are afraid of English and they find it the most difficult school subject.

3.3. Accounting for Differentials in Students' Development

To account for the differentials in students' developments, the research team has conceptualized a five-tier learning environment framework to identify facilitating and

hindering factors affecting students' learning. The conceptual framework can be mapped as follow.

1. Individual pre-entry attributes
 - 1.1. AAI in SSPA
 - 1.2. SES
 - 1.3. Gender
2. Students' learning habitus
 - 2.1. Academic self-concept
 - 2.2. Learning motive and strategy
 - 2.3. Attitudes towards bilingualism and English learning
3. Classroom learning environment
 - 3.1. Mode of instruction
 - 3.2. Instructional climate
 - 3.3. Disciplinary climate
 - 3.4. Students' perception of teachers' efficacy
 - 3.5. Students' perception of teachers' instructional leadership
 - 3.6. Classroom learning environment, from qualitative study
4. School learning environment
 - 4.1. Students' perceptions of quality of school life
 - 4.2. Teachers' perceptions of educational environment of school
5. Socio-cultural learning environment
 - 5.1. Parental involvement

The first tier consists of students' pre-entry attributes, i.e. factors that are beyond the control of secondary schools. Three such attributes have been identified and assessed in the Study. They are students' AAI, SES and gender, which have been shown to have significant effects on students' academic achievement. The effects are particularly prominent in English achievement, as evidenced in the finding that the models of pre-entry attributes can account for more than two-thirds of the total variances of the English achievement scores on average. Among these pre-entry attributes, measures of AAI at individual level have consistently produced significant and positive effects on academic achievement in all five school-subjects studied in both the 98 and 99 cohorts. As for measures of AAI at school level, they have consistently produced both significant and positive effects on achievement in English, Chinese and mathematics. Gender (i.e. being female) has consistently produced significant and positive effects on Chinese and English achievements across forms and the cohort as a whole. It also has

significant and positive effects on achievement in social studies in most of the models. Finally, measures of students' SES at individual level have consistently produced significant and positive effects on English achievement. The measures of SES at school level have also asserted significant and positive effects in most of the English models. However, students' SES has no significant effects on achievement in other four subjects.

The second tier of factors in the framework is students' individual learning habitués. It is revealed that these are able to produce some significant effects on students' academic achievement. First, measures of students' academic self-concepts at individual level have consistently produced positive and significant effects on academic achievement in all subjects and in both the 98 and 99 cohorts. However, measures of academic self-concept at school level have not yielded any such consistent and significant effects. Secondly, students' learning motive and strategy on the whole, have demonstrated significant effects on academic achievement. All three measures of learning motive at individual level have consistently produced positive and significant effects. They indicate that as long as students are strongly motivated to learn, no matter whether it is surface, deep or achieving motives. They all have a positive bearing on students' academic achievement. In the case of measures of *Deep Strategy* at an individual level, there is a positive and significant effect on achievement in all subjects, while for *Surface*, *Achieving* and *Rote-learning Strategies* at individual levels there is a negative and significant effect. However, learning motive and strategy at school level have no significant effects on academic achievement. Finally, students' attitudes towards bilingualism and English learning have also produced some significant effects on students' achievement in English. It is revealed that four dimensions of the construct at individual level, i.e. *Interest in English*, *Instrumental Orientation*, *Motivational Intensity in School* and *Motivational Intensity in English Lesson*, have consistently produced positive and significant effects on English achievement. At school level, *Motivational Intensity in English Lesson* also has significant and positive effects on English achievement. Taken together the findings on students' individual learning habitués reveal that the positive constituents of individual learning habitués are a high academic self-concept of oneself, strong motive in learning, adoption of deep strategy in the learning process, and strong motivational intensity of learning English in schools and especially in English lessons. Negative components of individual learning habitués are adoption of surface, achieving and rote-learning strategy in the learning process.

The third tier of factors in the framework is classroom learning environment. This has also produced some significant effects on academic achievement. Salient effects of the three modes of classroom instruction on academic achievement are apparent. *Exposition of Content* appears to be the most prominent mode of instruction in the sampled classrooms. It has also consistently producing positive and significant

effects on achievement in English, Chinese, mathematics and science. *Discipline Management* and an *Activity Approach* also produce significant and negative effects. Instructional climate is the second aspect of classroom learning environment under study. Among the four dimensions of instructional climate, *Accomplishment and Motivation* turns out to be the dimension, which has consistently produced significant and positive effects on Chinese and English achievements. They indicate that an instructional climate, which provides students with a sense of accomplishment and motivation, has positive effects on Chinese and English achievement. Third, the construct of disciplinary climate of classrooms, which is made up of *Disciplinary Order* and *Academic Order*, has also produced some significant effects on students' achievement. It is revealed that orderly climate, no matter in terms of *Disciplinary* or *Academic Orders*, produces positive effects on students Chinese and English achievements. Students' perception of teachers' efficacy in Chinese and English lessons is the third aspect of classroom learning environment that we have investigated. Among the three dimensions of teachers' efficacy, *Apathetic Teacher* stands out as the most significant hindering factor to Chinese achievement. They indicate that students perceiving their teachers as apathetic in Chinese lessons has a negative effect on their Chinese achievement. As for English lessons, *Stern Teacher* also has significant and negative effect on English achievement, but only in the 98 cohort. The last aspect of the classroom learning environment that we researched is students' perception of teachers' instructional leadership. Among the four dimensions of instructional leadership, *Organizing Instructional Task* has been able to produce significant and positive effects on Chinese and English achievements consistently in both cohorts. Taking the findings in classroom learning environment together, it is revealed that positive components of classroom learning environment are made up of adopting exposition of content as the predominant mode of instruction with the provision of sense of accomplishment and motivation to students. Negative constituents compose of adopting discipline management and an activity approach as the frequent modes of classroom instruction and apathetic and stern attitudes of teachers.

The data generated from the qualitative study, provides some significant information on the classroom environment in EMI and CMI schools. Teachers, who have switched from EMI to CMI mode, have repeatedly registered the effectiveness of mother tongue (MT) in teaching science and social studies in junior forms. They have agreeably signified the effectiveness of MT mode on explicating abstract scientific concepts and complicated social issues, and on relating and applying scientific or social principles to daily life examples. These teachers have also reported that switching to MT has greatly enhanced students' participation in the learning processes in science and social studies. Students have assumed much more active roles in raising questions,

bringing in new information and examples to classroom instructions, and engaging in group discussions and classroom deliberations. This contrasts with comments of teachers in EMI schools who admit the restraining effects of EMI modes on students' participation in classroom activities.

The fourth tier of the framework is school learning environment. This has uncovered some significant effects on students' achievement. Students' perception of the quality of school life is the first aspect of school learning environment that we investigated. It is revealed that the construct has only provided clearly identifiable effects on achievement in English and science. In the model accounting for English achievement, *Opportunity relating to MOI* in use in school has produced significant and positive effects on students' English achievement, while *Linguistic Efficacy* has negative effects. They basically confirm the findings that students in EMI schools hold high hopes for their prospects but suffer from language difficulties in classroom instruction and teacher-student communication. In the models accounting for science achievement, *Linguistic Efficacy* has positive effects on science achievement. The findings also confirm that students in CMI schools enjoy linguistic efficacy in CMI and have value-added growth in their science achievement. The second aspect of the school learning environment that we have investigated is teachers' perception of school educational environment. Among the eight dimensions of educational environment, *Student Body Composition* is the dimension that is able to produce definite effects on achievement. It is revealed that students' academic and behavioural compositions in school have significant and positive effects on achievement in English, mathematics and science.

The last tier of the framework is the socio-cultural learning environment provided by students' parents. It transpires that three dimensions have consistent and significant effects on achievement in all five subjects. They are *Supervision*, *Volunteer Activity* and *Encouragement*. The former two have yielded negative effects, while the last is positive. They indicate that parents' frequent supervision and participation in volunteer work at schools has negative effects on students' achievement, while frequent encouragement from parents has positive effects.

Having considered the effects of the five tiers of learning environment on students' achievement separately, it is now possible to account for the different effects of EMI and CMI schools on the significant differences in students' achievements in science, social studies, and English using a more holistic perspective.

Firstly, to account for the thirty-percentile difference in value-added effects between CMI and EMI schools in science achievement, one of the most prominent theses that has been found is the double second-language (L2) thesis. It has been well

documented in related literature and in fact verified in the Study that learning science for the first time is inherently difficult in a linguistic sense. The scientific terminology and methods of inquiry are all foreign to children just like a foreign language. Furthermore, learning science in L2 imposes yet another hindrance on students. These double L2 effects have been revealed in the findings of this Study in a number of ways. As explicated above, in value-added models, classroom instruction in English has caused EMI students to lag behind CMI students by, on average, twenty percentiles in science achievement scores, while assessment in English would cause EMI students another ten percentile lag. Furthermore, in in-depth interviews science teachers repeatedly register that teaching science in English reduces their instructional effectiveness in both explication of subject matter and relating and applying scientific knowledge to students' daily-life experiences. Finally, these teachers also underline that EMI mode has constrained students' active participation in the learning process, such as answering or asking questions and in classroom discussions.

Secondly, to account for the twenty-percentile difference in the value-added effect on social studies between CMI and EMI schools, it is revealed that the double L2 thesis accounting for differential effect on science achievement cannot apply. All that can be claimed is a single L2 effect, namely, English. This is evidenced by the findings that when EMI students are tested with bilingual-version papers instead of monolingual-English papers, EMI students' twenty-percentile disadvantages in social studies achievement have simply disappeared, in other words, the differential effects between EMI and CMI schools have become statistically insignificant. These findings signify that L2 learners of social studies do not experience the hindrance of foreignness, which they experience in science learning, because the vocabularies and mode of inquiry in social studies are less remote from students' daily life experiences than those of natural science. Hence, the hindrances facing L2 learners of social studies are mainly difficulties in understanding English texts, especially those in assessments. Apart from the outcomes in achievement scores, it is also revealed in interviews with social studies teachers that there are significant qualitative differences in the learning processes of social studies between CMI and EMI classrooms. Social studies teachers have repeatedly registered that as the MOI has switched from EMI to CMI, they have experienced profound enhancements of instructional effectiveness in social studies lessons. These teachers underline that without the language barriers they can explicate concepts and theories in social studies in much greater details and illustrate them more realistically with current affairs examples, which students have already come across in the mass media. Furthermore, these teachers also state that students have assumed a much more active role in the learning process of social studies once they have switched to CMI. Most of them have no difficulty in reading Chinese materials found in a variety

of sources, e.g. newspapers, magazines, government documents and publications, and so on. For these reasons, they can bring additional information and materials to the learning process from the mass media and Internet. Most tellingly, these teachers have repeatedly underlined that by conducting the lessons in Cantonese-Chinese, students can engage in discussions and deliberations analytically and even critically on current issues related to the subject matter. As a result, students' analytical power and critical literacy on current public issues have been significantly enhanced in mother-tongue classrooms.

Finally, in explaining the twenty-percentile difference in the value-added effect between EMI and CMI schools on English achievement, it is revealed that there are two categories of factors at work in HK secondary schools. The first can be characterized as the thesis of comprehensible English input, more commonly known as the exposure thesis. It signifies that students in EMI schools are practically exposed more intensively and extensively to comprehensible English input than CMI students. The second category of factors is psychological. EMI students have higher self-esteem regarding their English ability right at the beginning of their junior-secondary years. They also display greater motivational intensity and interest in English learning. Lastly, they also believe that they have greater opportunities for educational and socioeconomic advancement. Taken together, it seems that a kind of psychology of elitist bilingualism has been constituted among students in EMI schools. CMI students have a profoundly different psychology towards English and English learning. Firstly, CMI students hold significantly lower self-esteem of their English ability. Second, they indicate significantly lower motivation and interest in English learning. Third, they seem to have developed a feeling of abhorrence of and sense of difficulty towards English. Lastly, they believe that the CMI mode will limit their prospects of educational and socioeconomic advancement. As a whole, they signify that a kind of self-denying and self-defeating psychology of English learning is permeating among students in CMI schools.

3.4. Institutional and policy effects on secondary school system

Apart from the effects of ability and MOI streaming on individual student's academic and psychosocial developments, the findings of the Study revealed that the ability-streaming effect of the SSPA system and the MOI-streaming effect of the *Guidance* have produced some significant institutional impacts on the secondary school system of Hong Kong. First, it is revealed that Hong Kong secondary schools are highly segregated in terms of students' academic achievement levels right at their entry levels. This can be evidenced in findings that between-school variances of the AAI in both the 98 and 99 cohorts have constituted more than eighty per cent of the respective total variances. Second, when the between-school variances in the 98 and 99 cohort is compared with those in 1994, it is revealed that the implementation of the *Guidance* has

increased the degree of ability-segregation in Hong Kong secondary schools at their entry level, by about ten per cent. This indicates that the *Guidance* has added a diglossic* twist to the institutional segregation among secondary schools, that is, Hong Kong secondary schools are aligned into EMI and CMI streams. Finally, when we put together the institutional effect of the SSPA system and the policy effects of the *Guidance*, it is revealed that a strong element of elitist bilingualism is permeating the secondary school system of Hong Kong. (see *Appendix I* for detailed explication)

4. Implications

The findings of the study reveal a number of implications worth-mentioning. They can be categorized into two levels namely implications at instructional level and at policy and institutional levels.

4.1. Implications at instructional level

Implications deduced from the findings, which may inform teachers in modifying their classroom instruction in EMI and CMI schools in Hong Kong, can be categorized into three groups as follows.

(i) Instructional implications for science education

Due to the double L2 effects at work in science classrooms in EMI schools, science teachers in EMI schools are facing formidable tasks in helping their students to overcome the hindrances generated from the unfamiliarity of subject matters of science, on the one hand, and the hindrances caused by using a foreign language, i.e. English, as MOI, on the other. Hence, it is advisable during teacher training or retraining programmes to alert science teachers in EMI schools to these hindrances and to raise their linguistic sensitivities. It may also be helpful if EMB can take the lead in summarizing and disseminating instructional practices of science teaching in EMI schools which have proven to be effective in helping students in EMI schools to overcome the double L2 effects.

As for science teachers in CMI schools, they should be made aware of the effectiveness of MT on science education as revealed in the Study. They include (1) the effectiveness of explicating scientific concepts and principles in greater depth and detail, (2) the effectiveness of relating and applying scientific concepts and principles to students' daily life experiences more frequently and with greater variety, (3) the comprehensibility and accessibility of Chinese texts, which enable students to obtain knowledge by their own efforts from a much greater variety of sources, and (4) the effectiveness of allowing students to assume a much more participatory role in the

learning process, such as participating or even initiating discussions relating to scientific knowledge and inquiry. How to sustain and enhance the effectiveness of CMI in their science lessons is the major task assigned to all science teachers in CMI schools.

(ii) Instructional implications for social studies education

Findings of the Study have revealed that in Hong Kong, junior-form students learning social studies in English have experienced language hindrance in comprehending the English texts found in textbooks, supplementary reading materials and in particular test items in assessments. Nevertheless, the Study has also revealed that students in EMI schools have less difficulty in understanding the subject matter of social studies than they do in science subjects. That is probably because the subject matter of social studies is less foreign to students' daily-life experiences than that of science. In light of these findings, it seems that the formidable task facing social studies teachers teaching in English is to bridge the literal gap between students' daily social lives and the alienating English texts.

As for students learning social studies in Chinese, the value-added advantages they enjoy over EMI students are not solely attributed to the comprehensibility of the Chinese texts. It has been revealed in the qualitative study, especially the in-depth interviews with social-studies teachers who have switch from EMI to CMI, that teaching social studies in Chinese has greatly enhanced the relevance of the subject matter to students' daily life. These teachers have repeatedly underlined that without the language barriers, they can explicate concepts and theories in social studies in much greater details and illustrate them with relevant current affairs, which students have already come across in the mass media. Furthermore, these teachers have also stated that students have also assumed a much more active role in the process of learning social studies once they have switched to CMI. Most of them have no difficulty in reading Chinese materials found in various sources, including newspapers, magazines, government documents and publications, and so on. This enables them to bring additional information and materials into the learning process. They can also engage in in-depth discussions or even debates on current issues related to the subject matter. As a result, students' analytical powers on current public issues have been significantly enhanced. Therefore, how to maximize as well as to disseminate these advantages given by CMI in social studies teaching is one area that both teacher trainers and officials should look carefully into.

Some teachers have emphasized that the advantages of CMI in teaching social studies has not been fully capitalized on. They have also pointed out a number of structural hindrances which have arisen. The first is the limited supply of Chinese textbooks. They point to the fact that there are not many high quality Chinese textbooks

in social studies, especially in subjects such as History. These shortages are especially serious at Form Six level. A number of experienced teachers pointed out that, under the mandate of the EC Report No. 1 (1984), the Hong Kong Government set up a fund to provide financial assistance for the publication of Chinese textbooks. They suggest that the HKSAR Government should re-activate the fund if it really wants to promote mother-tongue instruction. In relation to the policy measures in promoting mother tongue instruction initiated in the same report, teachers also pointed out that some of the English-Chinese glossaries of terms commonly used in the teaching of social studies subjects in secondary schools have not been updated for more than a decade. As a result, teachers switching from EMI to CMI have faced difficulties in finding standardized translations of terminologies to work with. (One teacher made the useful suggestion that these glossaries should be provided in CD-Rom format, so that teachers as well as students could learn the correct pronunciations. The teacher emphasized that this would benefit students in both EMI and CMI schools.) Another area of improvement suggested by teachers teaching junior-secondary social studies is regarding the instructional content specified in the syllabus and found in textbooks. A number of teachers have pointed out that the syllabus of social studies and even geography, in junior forms can be expanded both in depth as well as in scope in response to switching to Chinese MOI. They point out that while the depth and scope of the instructional contents found in English textbooks may seem to be at appropriate levels in consideration of the language barriers that Form-1 students encounter, in Chinese it will be too easy in the eyes of both teachers and students. They believe that if the syllabus of junior-secondary social studies could be expanded to take account of this, the advantages of CMI in teaching social studies may be further increased substantially.

(iii) Instructional implications for English education

It has been substantiated in the Study that junior-secondary students in EMI schools have significant value-added advantages in English achievement over students in CMI schools. These advantages can be attributed first of all to the English learning environment in EMI schools, in which students are intensively exposed to comprehensible English-language inputs in terms of time and the scope. It has also been discovered that the mandate of the *Guidance* has more or less “purified” the English learning environment in the classrooms of EMI schools. This can be evidenced in the findings in the in-depth interviews with schoolteachers that most of the teachers in EMI schools have switched from mixed code English and Cantonese to monolingual English code. These schoolteachers have also reported that in comparison with students exposed to mixed-code classroom instruction, students in the 98 and 99 cohorts have improved in English writing, in terms of vocabulary and phrasal expressions, which, in interviews, they have attributed to their switch from mixed code to pure English instructions.

Therefore, EMI schools and their teachers are advised to maintain English monolingual code, and to further improve a conducive English learning environment as this is vital to the success of English education revealed in their schools.

Apart from the conducive English learning environment found in EMI schools, another factor contributing to the value-added effect of EMI schools on English achievement is a set of psychological factors, which work jointly together to motivate EMI students' efforts and interests in learning English. First of all, it has been revealed in the Study that the English self-concept of EMI students became significantly higher by comparison with their counterparts in CMI schools, as soon as they were admitted to EMI schools. This relatively higher self-esteem on English competence has been sustained throughout EMI students' junior-secondary years. Secondly, it has been shown that EMI students have higher motivation and greater interest in learning English by comparison with students in CMI schools. Finally, it has been revealed in the Study that EMI students have more positive perceptions of their opportunities for educational and socioeconomic advancements. They attributed such opportunities to their being enrolled in EMI schools. It is of no surprise that such a psychology in EMI students has contributed to the value-added achievement in English found among EMI students. However, we will argue that such a psychology of EMI students can also be interpreted as resulting from the elitist bilingualism constituted by the policy measures of the *Guidance*. The constitution of the elitist bilingualism will be further elaborated in the section on the implication at policy level.

The findings explicated above also have significant implications for the English instruction undertaken in CMI schools. One of most obvious, which should be noted by the administrators and teachers of CMI schools, is that they have been confronted by the extremely formidable task of helping CMI students to learn English. First, they have to think of ways to enhance the English learning environment in CMI schools and, more specifically, to improve both the quality and quantity of the comprehensible English-language inputs. Furthermore, teachers in CMI schools need to pay particular attention to the kind of self-denying psychology found among CMI students in relation to their attitude towards English learning and their English abilities. As indicated above, in comparison with EMI students, those in CMI schools have lower self-esteem regarding their English proficiency. They display lower motivation and interest in the learning of English. They also believe that they have relatively less opportunities for educational and socioeconomic advancement. Apart from these findings, interviews with English-language teachers working in CMI schools, which were previously EMI schools, revealed that CMI students have one other psychological block to the learning of English. Students in CMI mode found English much more difficult when they compared it with other school subjects, which are now taught in

mother tongue and therefore appear to be relatively easier. These teachers pointed out that they did not find the same sense of difficulty with English learning by student cohorts before the change of MOI from EMI to CMI. These teachers point to the fact that students in EMI mode felt that the English used in other content subjects was much more difficult than that found in English language lessons. As a result, students in EMI mode would usually show no fear of English and would even indicate their love of the subject because it was simply easier, and useful to the learning of other subjects. Conversely, students in CMI mode would usually show greater fear of English as a subject, and indicate that the subject was not that useful to their study in general. Taken together, it is no surprise to find that these self-denying and self-defeating attitudes toward English learning are highly associated with the relatively lower achievement in English found among students in CMI mode. How to help CMI students to contain and even resolve these self-denying attitudes towards English learning and assist them to learn English effectively is, therefore, an essential task that administrators and teachers in CMI schools must address.

4.2. Implications at policy and institutional levels

From the findings in relation to the policy and institutional effects of the *Guidance* and the SSPA system, it is implied that policy reviews on the *Guidance* should move beyond the individualistic orientation and address the institutional and structural features so prominent in the secondary education system of HKSAR. These structural features include high degree of ability segregation among secondary schools, the diglossic structure of the Hong Kong schooling system, and strong sense of the elitist bilingualism among stakeholders in Hong Kong education system. (see *Appendix I* for detailed explication)

5. Limitations of the Study

The implications of the findings of the Study at both instructional and policy levels are by no means exhaustive or conclusive. They should not be taken as definite prescriptions for engineering MOI policy in HK secondary schools. They should rather be construed as suggestions to facilitate policy discourses or debates relating to the issue. These words of caution are mainly prompted by the following limitations of the Study.

It is true that this Study is by definition an *ex post facto* evaluation research on the implementation of an education policy, namely the *Guidance of Medium of Instruction for Secondary Schools*. Hence, the data collected and analysed are records of events which have taken place in natural settings and temporal sequences. Also, the Study is mainly based on surveys and achievement tests, so they provide extensive accounts of the policy effects produced by the *Guidance* on a representative sample of schools and their teachers and students. The extensive quantitative data are also supplemented by in-depth qualitative data collected from classroom observations and

interviews. Nevertheless, we would like to point to the fact that these data can not have captured the total educational activities undertaken in schools and classrooms, which were affected by the policy measures entailed by the *Guidance*. Therefore, we would like to recommend that the findings of the Study should be given to the educational professionals in secondary schools to serve as food for thought in facilitating a policy discourse on the MOI issue.

Secondly, this three-year longitudinal study has only traced the sampled students' academic and psychosocial development in their junior-secondary years. It in no way tells whether the effects of CMI or EMI on their development revealed here, will be sustained, increase, or decrease in the senior-secondary years or longer term. Hence, it is advisable that we exercise prudence towards these findings and wait for the findings generated from the second phase of the Study which will shed light on the MOI effects in sampled students' development in their senior-secondary years, i.e. Form 4 and 5. Following on from this limitation, it is worth pointing out that one prospect for further study on the issue is to trace these students further on their educational and socioeconomic attainment paths to see the longitudinal MOI effect further.

Thirdly, this three-year longitudinal study, which began in the second year of the implementation of the *Guidance* (i.e. 1999/00), can only assess the effects of the policy measures in their early stage of implementation. Usually, it takes time for policy measures, especially education policy measures, to mature and consolidate. For example, it takes time for school administration, teachers, curriculum leaders, textbook publishers, and other parties concerned to adjust to the policy changes and to come up with effective professional practices to cope with the new situation. Hence, the effects of EMI and CMI revealed in the Study may be augmented as the policy measures initiated by the *Guidance* are consolidated in the school environment and/or established as common professional practices in classroom situations. These propositions on the differential effects of developmental stages of policy measures have pointed to yet another prospect for the further study on the MOI issue in HKSAR.

Apart from these three empirical limitations, there is another limitation derived from the epistemological foundation of the study of policy of language in education. It has been documented in literature on language policy and planning that research on language policy in education is a formidable endeavor, especially if researchers take in not only the individualistic and neo-classical approaches but also the holistic and structural perspectives. Difficulties are spawned not only from the complexities of the empirical properties under study, but also from the complications of the cultural, socioeconomic, and political contexts, in which the issues under investigation are embedded. In relation to this limitation, we would like to underline that the findings and implications of the Study should not be taken as a once-and-for-all

conclusion to the MOI issue of the HKSAR, instead we would recommend that the findings of the Study should be taken as empirical references to facilitate a rational and democratic discourse on MOI policy in secondary schools in the post-1997 HKSAR.

Note:

- * The application of the concept diglossia or even triglossia to the language situation of Hong Kong can be found in Johnson, 1994; Luke and Richard, 1982; So, 1989. The concept of diglossia was first developed by Ferguson (1959) and Fishman (1967). It refers to a stable language situation, in which two functionally differentiated languages or two varieties of a language co-exist. They are basically differentiated into high variety (H) and low variety (L). H variety is more likely to be used in formal situations, such as in legislature, fine literature, formal education, etc, while the L variety is used in informal situations, such as the local marketplace, folk literature, informal instruction, etc. (Fishman, 1967; see also Wardhaugh, 1992; and de Mejia, 2002) However, the concept of diglossia has been criticized by critical sociolinguists as structural-functionalist in perspective and not taking into account the inequality and power embedded in language situations. (Eckert, 1980; Martin-Jones, 1989; and McKinnon, 1984)
Taking these perspectives together, the concept used in this Study will not only conceptualize diglossia as the co-existence of functionally differentiated languages in various domains, but also take into account features of inequality and stratification among languages and symbolic power and violence (Bourdieu, 1991) embedded in diglossia.