

A Critical Review of the Development of Generic Learning Outcomes: How Engaging is The New Senior Secondary (NSS) Curriculum Reform in Hong Kong?

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Abstract

Hong Kong is moving towards a knowledge-based economy. In order to nurture and motivate a population to continuously achieve world-class success, Hong Kong's education system has been reformed extensively since 1997, with a balanced focus on academic and practical learning. Generic forms of learning outcomes are critical to allow students to demonstrate high flexibility and adaptability in response to ever-changing challenges in the future. By using two well-validated instruments which measure students' achievement of generic learning outcomes and their engagement in schools, the cultural literacy and student engagement scales, this study aims to assess the development of generic learning outcomes of Hong Kong senior secondary school students, the extent to which students are well-equipped with the skills to succeed in a knowledge-based economy. The results of a survey study of 1,715 students inferred that their performances were not up to standard and questioned in particular the success of the New Senior Secondary (NSS) school curriculum. A regression model further suggested that these generic learning outcomes could largely be explained by how schools plan and facilitate students' learning inside and outside the classroom. It is argued that the primary role of NSS schools should focus to provide students with meaningful and useful learning experiences so as to achieve the curriculum goal of fostering their generic learning. This paper will contribute to the discussion of how to better support the NSS curriculum reform in Hong Kong. (234words)

Keywords: outcomes of learning / generic skills / Hong Kong New Senior Secondary (NSS) school curriculum / cultural literacy / student engagement

Introduction

Hong Kong's economy has transformed to become more knowledge-based. The Organization for Economic Co-operation and Development (OECD) defines a knowledge-based economy as an economy which is "directly based on the production, distribution and use of knowledge and information" (OECD, 1996). It features trends "towards greater dependence on knowledge, information and high skill levels, and the increasing need for ready access to all of these by the business and public sectors" (OECD, 2005). A knowledge-based economy is more than the capacity of infrastructure and environment. It concerns more about a territory's long-term development plan and the effort that it lays out to continuously review its strengths and weaknesses to increase competitiveness. Although Hong Kong has been strong and successful in the dimensions of information and communication technology, innovation systems and the business environment (CSD, 2013), whether it could reach a sustainable world-class success yet relates strongly to its human resource development strategies to prepare young people for future work and life challenges.

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A territory's education system and school curriculum are these important human resource development strategies which help young people to pave their own development. Since its return of sovereignty to Mainland China in 1997, Hong Kong's education system and school curriculum have gone through different reform measures. Reform of the basic education system (from primary to junior secondary school) emphasized the goal of quality education as to develop students in an all-round and balanced manner (CDC, 2002). In 2004, the Education and Manpower Bureau (EDB) proposed a change of the whole secondary school education from the British system (3+2+2) to the new academic structure (3+3) (Cheng, 2009). In respond to this new academic structure, in 2005, the EDB announced that changes would be made to the New Senior Secondary (NSS) school curriculum and the public examination system by introducing the Hong Kong Diploma of Secondary Education (HKDSE). Under the new academic structure of 6 years of secondary school education, students will have a secondary student learning profile including results of the HKDSE.

According to Cheung and Wong (2011), under the NSS school curriculum, different forms of generic learning outcomes (e.g., problem solving, critical and high-order thinking, creativity, collaboration and communication) must be integrated into the learning and teaching of existing school subjects. The school curriculum was recommended to focus on providing students with different essential learning experiences, for example moral and civic education, intellectual development, community service, physical and aesthetic development, and career-related experiences. Different curriculum techniques and initiatives – e.g., learning through information and communication technology, co-curricular modes of learning, and assessment for learning strategies – were experimented in schools. Positive values and attitudes such as perseverance, respect for others, responsibility, civic identity and commitment, were also stressed throughout the entire learning process. To support the integration of academic and generic learning, reform in the structure of the senior secondary school sector was to trim down the number of academic subjects to give more scope for students to develop these skills and values, to learn how to learn, and to realize the goal of whole-person development. This involved a new core subject of Liberal Studies, Applied Learning courses as electives, and students' 15% to 35% of study time in terms of Other Learning Experiences (OLE).

While the progress report (CDC, HKEAA & EDB, 2013) highlighted the achievements of the new academic structure, there is still question of whether the curriculum provided enough support for students to develop those generic learning outcomes and to equip them for a knowledge-based economy. With reasonable doubt, a number of studies have documented the problems of the NSS school curriculum for: (i) failing to provide schools with sufficient resources to broaden students' learning experiences and cater for individual differences (Yeung, Lee & Lam, 2012); (ii) creating heavy workload for teachers (Cheng, 2009) but not giving them sufficient lesson time to develop students' communication and collaboration skills (Wong, 2014); and (iii) introducing new forms of inequality in education (Poon & Wong, 2008). There are in fact many challenges to implement the NSS school curriculum reform. Cheung and Wong (2011) mentioned that teachers must be well prepared for the NSS school curriculum such as learning and applying new teaching strategies, catering for diversified students' learning needs, implementing new assessment strategies to support student learning, developing students' language proficiency, etc. According to Cheng (2009), due to the fundamental change in the curriculum, teachers were forced to put additional time and effort in their daily operation to prepare students for the change that associated with the public examination system (HKDSE) and classroom teaching and learning therefore turned out to be more examination-oriented.

Based on the challenges indicated in the above studies for implementing the NSS school curriculum, it is important for educators to carefully examine whether the NSS school curriculum is operating as it promised to enable students to develop a broader knowledge base and to provide them with a solid foundation for whole-person development. The HKSAR Government's Press Releases (2015, June 29) of medium-term review of the new academic structure highlighted, "The Seven Learning Goals [of the new academic structure] were agreed by a consensus of the school community, but in view of a changing world and society, the Goals would be revised to change with the times". In this regard, the research questions that guide the present study are:

1. How well are senior secondary school students being supported by the NSS school curriculum to develop their generic learning outcomes for future challenges and how engaging is the NSS school curriculum?
2. How facilitative are the school experiences for senior secondary school students to develop a broader knowledge base and to provide them with a solid foundation for whole-person development?

3. How does senior secondary school students' engagement in the NSS school curriculum associate with their development of generic learning outcomes?

Since the NSS school curriculum primarily functions to drive human and societal development, this study is significant in assessing Hong Kong senior secondary school students' development of generic learning outcomes through using comprehensive and well-valid measures (i.e., cultural literacy and student engagement which will be reviewed in later sections). This study will have important implications for government officials, educators and local schools by evaluating the NSS school curriculum for the development of students' generic skills learning and recommending directions for improvement. Furthermore, Banks (1991) suggested that most curriculum reforms are caused by change in the nature of the workforce, and it is important to provide research evidence of the current implementation which helps to suggest corresponding strategies for teachers to induce positive change for this NSS school curriculum reform. Therefore, this study contributes to the curriculum evaluation perspective by examining if the NSS school curriculum is supporting its curriculum aims to foster students' generic learning outcomes through different learning experiences.¹

Literature Review

Generic learning outcomes in the New Senior Secondary (NSS) school curriculum

The development of generic learning outcomes, throughout different education phases, is critical to prepare students to face future work and life challenges in a knowledge-based economy. According to Brown (2007), learning outcomes are the benefits that people can gain through their learning activities and generic learning outcomes included: (i) knowledge and understanding; (ii) skills; (iii) values and attitudes; (iv) enjoyment, inspiration and creativity; and (v) action, behavior and progression. Knowledge and understanding are about knowing what, learning facts, deepening understanding and making sense of something. Skills are defined as knowing how to do something, intellectual, social and communication skills. Values and attitudes relate to the feelings and perceptions about ourselves, others and the situations. Enjoyment, inspiration and creativity is all about having fun, creativity, exploration and experimentation. Finally, action, behavior and progression are what people do, intend to do and have done.

In the Hong Kong context, generic learning is the focus of the New Senior Secondary (NSS) school curriculum. As illustrated in the Senior Secondary Curriculum Guide (CDC, 2009, Booklet 1, p. 7, original emphasis):

The SS [Senior Secondary] curriculum is an extension of the curriculum in basic education. It promotes students' **Learning to Learn** capabilities. It is broad and balanced, and is developed from prior knowledge of the eight KLAs and the learning experiences of students gained in their basic education with an emphasis on positive values and attitudes.

Under the NSS school curriculum, all students are required to take the new core subject, Liberal Studies, together with other core subjects of Chinese language, English language and Mathematics, plus two other elective subjects (e.g., Physics, History, and Applied Learning courses), which leaves 15% to 35% of study time to Other Learning Experiences (OLE). Applied and practical learning are integrated in the theoretical knowledge, and students are expected to actively enquire and apply their learnt generic skills for this integration. Students can use their prior knowledge and apply it flexibly to their self-directed learning paths that best represent their own interests and study needs, and this will, hopefully, link to broader professional and vocational fields.

As further illustrated in the Senior Secondary Curriculum Guide (Draft) (CDC, 2017, Booklet 1, p. 15):

Knowledge and skill sets required by the future labour market will be very different from what are required today. Knowledge which is static and supposed to be learnt only within the classroom walls is no longer good enough for the dynamic workplace in the changing world. The globalised world is changing so fast that knowledge will become obsolete soon after it has been taught. With an acceleration in the production and circulation of knowledge, individuals not only need a solid knowledge base, but also the ability to learn from diverse modes and sources, and continue to learn throughout life.

The emphasis of generic learning outcomes is also reflected in the development of the Qualifications Framework (QF). The QF sets out four distinct aspects – namely: (i) knowledge and intellectual skills; (ii) processes; (iii) application, autonomy and accountability; and

(iv) communication, IT and numeracy – for assessing and judging quality-assured qualifications, outlining what a holder of a certain qualification knows and can do, and creating (EDB, 2015).²

Using the QF Level 3 as an example, holders of senior secondary school qualifications are expected to: (i) access, organize and evaluate information independently and make reasoned judgments in relation to a subject or discipline; (ii) operate in a variety of familiar and some unfamiliar contexts, using a known range of technical or learning skills; (iii) perform tasks in a broad range of predictable and structured contexts which may also involve some non-routine activities requiring a degree of individual responsibility; and (iv) use a wide range of largely routine and well-practiced communication, IT and numeracy skills. Again, all these skills are generic and transferable from one learning or work context to another.

The important value of assessing generic learning outcomes has gained much attention in recent years. For example, the International Information and Communication Technologies Literacy Panel in 2002 first defined 21st Century skills as “using digital technology, communication tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society” (International Information and Communication Technologies Literacy Panel, 2002). In 2010, the OECD started the Assessment of Higher Education Learning Outcomes (AHELO) project which focused on assessing different discipline-related outcomes that reveal specifications of jobs and knowledge of practices (OECD, 2019). These assessment studies have provided school authorities and administrative bodies with information on how students learn and how to advance the quality improvement processes. They also inspired research to focus on examining the validity of students’ core competencies (e.g., Kennedy & Hui, 2013; Mock et al., 2011). One research agenda that stimulates most of the discussions is the work of Hui (2014), which suggested applying cultural literacy to assess the extent to which students in professional and vocational fields in Hong Kong are well-equipped with the necessary skills to become lifelong learners. The agenda has been moved further by Hui and Cheung (2015) to examine how those skills could be instilled by proper planning and facilitation of educationally purposive activities, student engagement as it is called, in the Technical and Vocational Education and Training (TVET) context in Hong Kong. The constructs of “cultural literacy”, which these two studied focused, is a key measure in this study to assess the development of generic learning outcomes of Hong Kong senior secondary school students, and the extent to which they are well-equipped with the skills to succeed in knowledge-based economy. According to Moy (1999), in order to increase the generic competencies of individuals, it is important to integrate some key competencies in individuals’ training, and these key competencies included, for example, cultural understanding, transferability, literacy, etc.

Cultural literacy: An important measure of generic learning outcomes

The concept of “cultural literacy” that proposed in this study is an important measure of students’ generic learning outcomes (Hui, 2014; Hui & Cheung, 2015). It is defined as sets of knowledge and skills and the personal qualities that one needs to exercise in working and interacting with others. The term “cultural literacy” was first introduced by E.D. Hirsch Jr. (1987), which proposed the knowledge needed to articulate the complex ideas that constitute people’s culture. Although the term “culture” is used which referred to the movement towards uniformity in education in terms of “what someone needs to know”, there has not been any attempt to make everyone the same or suppress democracy in education. Hirsch stated his position in an interview (Education Sector, 2006):

[The book] Cultural Literacy made the claim that literacy required cultural literacy, which is actually true, but it was very unfortunate that the term “culture” happened to be used there. It would be much better if I said communication within a speech community requires unspoken shared knowledge, knowledge of conventions, knowledge of shared things.

Following this explanation, cultural literacy refers more to the knowledge and skills that allow a person to understand what he or she is reading (a book), writing (a note), and speaking and listening (to and with others). Hirsch (1987) believes that everyone should be culturally literate, that is to be equipped with the knowledge and skills in order to effectively communicate and work with others in the society that we all share. Cultural literacy describes the personal qualities that are required in most work and life situations, in which individuals are required to apply the corresponding knowledge and skills to communicate and work with others. The more culturally literate one is, the more base knowledge and skills one is able to get hold of, and thus the more intelligent and reasonable one will be able to interact with the world. Based on the above explanations, cultural literacy is termed in this study as an important measure of students’ generic learning outcomes.

As argued by Paul and Binker (1993), there should be a straight forward plan to develop students' generic learning outcomes, for example, reading materials in school should base strongly on factual information and traditional lore, which aim to come to an agreement about the vocabulary of work and further studies and develop their general knowledge to achieve the next level of challenges. Paul and Binker (1993), however, also criticized Hirsch's reasoning was too general, and that more attention should be paid to the complexity of society and viewed cultural literacy as multi-faceted. Therefore, with such a critique of cultural literacy, and based on the work of Lemke et al. (2003), Hui (2014) developed an 8-construct, 24-item scale to measure cultural literacy in a multi-level perspective. The eight constructs are: "multicultural literacy", "global awareness", "self-direction", "higher-order thinking and sound reasoning", "teaming and collaboration", "interpersonal skills", "personal responsibility", and "social and civic responsibility". These eight constructs covered what Jürgen Habermas's (1984 [1981] & 1987 [1981]) argued as the three world-relations that involved in any communicative act, namely an external (objective) world of "seeing things", an internal (subjective) world of "personal values and ethics", and a social world of "acting with others". To elaborate further, an external world of seeing things is grounded in the dimensions of "multicultural literacy", "global awareness" and "higher-order thinking and sound reasoning". An internal world of personal values and ethics is grounded in the dimensions of "self-direction" and "personal responsibility". A social world of acting with others is grounded in the dimensions of "teaming and collaboration", "interpersonal skills" and "social and civic responsibility".

These eight constructs indeed reflect the focus of the new core subject of Liberal Studies in the NSS school curriculum, which covers the following modules of study (with constructs of cultural literacy referred):³

1. Module 1: Personal Development and Interpersonal Relationships ("self-direction", "teaming and collaboration" and "interpersonal skills" referred)
 - Theme 1: Understanding oneself
 - Theme 2: Interpersonal relationships
2. Module 2: Hong Kong Today ("multicultural literacy", "higher-order thinking and sound reasoning", "personal responsibility" and "social and civic responsibility" referred)
 - Theme 1: Quality of life
 - Theme 2: Rule of law and socio-political participation
 - Theme 3: Identity
3. Module 3: Modern China ("multicultural literacy", "global awareness" and "social and civic responsibility" referred)
 - Theme 1: China's reform and opening-up
 - Theme 2: Chinese culture and modern life
4. Module 4: Globalization ("global awareness", "personal responsibility" and "social and civic responsibility" referred)
 - Theme 1: Impact of globalization and related responses
5. Module 5: Public Health ("higher-order thinking and sound reasoning" and "personal responsibility" referred)
 - Theme 1: Understanding of public health
 - Theme 2: Science, technology and public health
6. Module 6: Energy Technology and the Environment ("higher-order thinking and sound reasoning" and "personal responsibility" referred)
 - Theme 1: The influences of energy technology
 - Theme 2: The environment and sustainable development

Referring back to the fundamental question to examine if the NSS school curriculum is supporting its curriculum aims to foster students' generic learning outcomes through different learning experiences, hence the use of the 8-construct cultural literacy scale was methodical.

With quantitative and qualitative evidence obtained from different samples of students, Hui (2014) and Hui and Cheung (2015) confirmed that these eight constructs:

(i) were internally valid (in terms of high Cronbach's alpha coefficients); (ii) were guided by a single latent variable (in terms of a good fit under confirmatory factor analyses); and (iii) represented what students experienced and termed as generic learning outcomes (in terms of students' comments and examples).

Cultural literacy is formulated in this study as a core measure to evaluate whether the NSS school curriculum is engaging enough to equip students with adequate generic learning outcomes to face future work and life challenges and to engage in lifelong learning. Table 1 illustrates Hui's 8-construct, 24-item cultural literacy scale.

Student engagement: Benchmarking effective educational practice

Recent studies have shown a strong positive association between development of students' generic graduate attributes/outcomes and the educational experiences which university provided (Barrie, 2007 & 2012). One important research paradigm that rooted in this strong positive association is to investigate the effort which university teachers and administrators made to cultivate an engaging learning environment for students (e.g., Kuh et al., 2007 & 2008). The key academic discourse is about the relationship between student success and their involvement in a variety of educationally purposive practices. Such an academic discourse, known as "student engagement", has been widely investigated in the National Survey of Student Engagement (NSSE) (Bryson & Hardy, 2011). Harper and Quaye (2009, p. 2) define student engagement as "participation in educationally effective practices, both inside and outside the classroom, which leads to a range of measurable outcomes". According to Coates (2005), student engagement originates from a constructivist conceptualization which suggests learning outcomes are influenced by students' participative performance in different learning-oriented activities. This engagement does not only measure the extent to which students actively participated in sets of educationally purposive activities but also reveals the effort which an institution made to foster student learning. Student engagement is an important indicator of student personal growth.

A huge body of literature has already documented the strong positive correlation between student engagement in educationally purposeful activities and positive educational outcomes (e.g., Carini, Kuh & Klein, 2006; McClenney, Marti & Adkins, 2012). A recent systematic review further demonstrated the positive associations between teacher-student relationship, student engagement, academic performance and school attendance (Quin, 2017). Student engagement is not about "engaging students" but is about "students engaging", that is the institute/school-generated conditions that stimulate student involvement (Bryson & Hardy, 2011). As put by Trowler (2010, p. 3):

Student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimize the student experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution.

Based on the above explanations, the concept of student engagement is used in this study to describe and assess how senior secondary students learn and develop from different academic and non-academic interactions with their schools.

The five benchmarks of effective educational practice, as suggested by the NSSE, are: (i) level of academic challenge; (ii) active and collaborative learning; (iii) student-faculty interaction; (iv) enrichment of educational experiences; and (v) a supportive campus environment (NSSE, 2010 & 2020). Among these five benchmarks, "active and collaborative learning" and "enriching educational experiences" are useful to this study. Active and collaborative learning refers to how frequently students actively engage in their learning and in helping each other to learn and to solve problems. Enriching educational experiences refers to how frequently students participated in educational activities that can increase their knowledge and skills within different religious, cultural and work settings.

Hui and Cheung (2015) modified and translated the NSSE with reference to two other related instruments: first, the National Survey of Student Engagement-China (NSSE-C), a translated version of the NSSE that was adapted to the Chinese context (Ross, Cen & Zhou, 2011); and second, the Community College Survey of Student Engagement (CCSSE) (The University of Texas at Austin, 2003) which measures student engagement in community colleges. Finally, there are seven items in each of the two benchmarks of "active and collaborative learning" and "enriching educational experiences".

In all of the above mentioned student engagement instruments, there are seven other areas which asked students to evaluate the extent to which their experiences with the institute/school contributed to their knowledge, skills and personal development.

These items are included in this study to infer how engaging the schools are in nurturing student growth and development. Table 2 illustrates items of the two benchmarks of “active and collaborative learning” and “enriching educational experiences”, as well as items of students’ evaluation of their school experience.

According to Bronfenbrenner (1998), one’s personal development has to be investigated under the entire ecological system in which growth occurs. This system ranges from a micro-system of interaction between a person and his/her immediate environment (such as school and family) to a macro-system of institutional influence of culture (such as customs and bodies of knowledge) on individual. Therefore, through investigating the influence of NSS school curriculum on the development of generic learning outcomes, this study indeed views student engagement as an ecological system for student growth and development.

Table 1.

The 24-item cultural literacy scale

Construct	Items
Multicultural literacy	<ul style="list-style-type: none"> • Aware of how cultural beliefs, values, and sensibilities affect the way they and others think and behave. • Appreciate and accept similarities and differences in beliefs, appearances and lifestyles. • Sensitive to issues of bias, racism, prejudgement and stereotyping.
Global awareness	<ul style="list-style-type: none"> • Knowledgeable about the connectedness of the nations of the world historically, politically, economically, technologically, socially, linguistically and ecologically. • Understand the role of China and Hong Kong in international politics and international relations. • Recognize, analyze and evaluate major trends in global relations and the interconnections of these trends with both their local and national communities.
Self-direction	<ul style="list-style-type: none"> • Set goals, plan strategically, and believe in their abilities. • Work to reach goals, focus and maintain their attention, constantly teach themselves, monitor their own performance, and seek help when needed. • Evaluate their work, understand that hard work and perseverance breed success, and have positive self-images of themselves as learners.
Higher-order thinking and sound reasoning	<ul style="list-style-type: none"> • Construct relationships between the essential elements of a problem in order to provide insight into it, and extract implications and conclusions from facts, premises or data. • Create and apply criteria to gauge the strengths, limitations, and value of information, data and solutions in productive ways. • Build new solutions through novel combinations of existing information.
Teaming and collaboration	<ul style="list-style-type: none"> • Be willing and able to take on different roles and tasks within the group to accomplish shared ends. • Apply collaborative skills to a variety of situations. • Reflect on group interactions after collaborative activities, and use experiences to make future collaboration more productive.
Interpersonal skills	<ul style="list-style-type: none"> • Be aware of and able to manage their own behaviour and emotions during social interactions. • Understand and positively manage the emotions of others and be empathetic in a face-to-face environment. • Use effective communication strategies to constructively influence the behaviour of others and to manage conflict effectively by devising win-win solutions.

Personal responsibility	<ul style="list-style-type: none"> • Set, prioritize and meet personal as well as civic, family and work-related goals. • Maintain a focus on important goals in spite of obstacles. • Balance personal, civic, family and work demands.
Social and civic responsibility	<ul style="list-style-type: none"> • Pursue public policy that promotes ethical behaviour. • Actively engage in public discourse and raise public awareness on ethical issues. • Promote positive changes that advance the public good.

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Table 2.

Items of the two benchmarks of student engagement and students' evaluation of their school experience

Benchmark/Evaluation	Items
Active and collaborative learning (7 items)	<ul style="list-style-type: none"> • Asked questions in class or contributed to class discussions. • Made a class presentation. • Worked with other students on projects during class. • Worked with classmates outside of class to prepare class assignments. • Tutored or taught other students. • Participated in a community-based project (e.g., service learning) as part of a regular course. • Discussed ideas from own readings or classes with others outside of class.
Enriching educational experiences (7 items)	<ul style="list-style-type: none"> • Had serious conversations with students of a different race or ethnicity than your own. • Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values. • Participated in co-curricular activities (campus publications, student organizations, intercollegiate or intramural sports, etc.). • Used an electronic medium (BBS, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment. • Attended practicum or internship. • Attended community service or volunteer work. • Attended an art exhibit, drama, play, dance, music performance, etc.
Students' evaluation of school experience (7 areas)	<ul style="list-style-type: none"> • Acquired job or work-related knowledge and skills. • Communicated effectively. • Developed critical and analytical thinking. • Developed creativity. • Learned effectively on your own. • Developed a personal code of values and ethics. • Solved complex real-world problems.

Methods

A survey research method was used for this study (Fink, 1995), as it allowed access to a comparatively large sample of cases within a short period of time. The collection of information was carried out anonymously and a high return rate was possible.

A self-administered questionnaire was developed. Items included: (i) the cultural literacy scale (Hui, 2014) (in a 4-point Likert scale from “never” through “sometimes”, “often” to “very often”); (ii) the two benchmarks of student engagement (in a 4-point Likert scale from “never” through “sometimes”, “often” to “very often”);

(iii) the questions which asked students to evaluate the extent to which their experiences at school contributed to their knowledge, skills and personal development (in a 4-point Likert scale from “very little” through “some”, “quite a bit” to “very much”); and (iv) students’ personal information (school type, gender and year of study).

Questionnaires were distributed to senior secondary students, who aged from 14 to 17, through their principals and class teachers, in nine local secondary schools which participated in a Quality Education Fund (QEF) project, entitled “Applying knowledge management practices in school education for sustainable development”.⁴ Although this was a purposive sample and there was no explicit selection criteria, the recruited nine schools actually represented a spectrum of equal number of schools from the three bands. The sample consisted of two band one, four band two and three band three schools. According to Linder (2002, p. 156), the banding system is that “more prestigious and academically demanding schools predominately have band-1 and 2 students, while less unfortunate schools end up with students of lower banding”.

One of the band one schools was a directly subsidized school while all the others were aided schools.⁵ In each school, half of the students in each senior secondary class were randomly asked by their class teacher to fill out the questionnaire in March to April 2013. With the support of the school principals and class teachers, the response rate was close to one hundred percent and 1,715 valid questionnaires were returned.

Questionnaire data were entered into the software, Statistical Package for Social Sciences (SPSS), for analysis and different statistical techniques were employed (Bryman & Cramer, 1997; Norušis, 2000).

Results

Sample statistics indicated that there were 50.7% males and 49.3% females. The distribution of their year of study, from Secondary 4 to Secondary 6, was 36.7%, 36.6% and 26.7%, respectively.

Reliability analysis indicated that the eight constructs of cultural literacy and the two benchmarks of student engagement were of high internal consistency as Cronbach’s alpha coefficients ranged from 0.764 to 0.829. Mean values were computed for each set of items (along the 4-point Likert scale from “never” to “very often” as from 1 to 4). Means of each of the secondary forms (Secondary 4, Secondary 5 and Secondary 6) were further examined with trend analysis using one-way ANOVA with repeated measures. Table 3 reports the results. For the eight constructs of cultural literacy, it was found that a slim majority of the senior secondary school students in this sample fell into the “never” and “sometimes” categories (as opposed to the “often” and “very often” categories). These constructs included: global awareness, self-direction, higher-order thinking and sound reasoning, personal responsibility, and social and civic responsibility. For the two benchmarks of student engagement, the majority of students in this sample (65.3% and 70.1%) chose the category of “never” and “sometimes” when asked: (i) how often were they actively involved in their learning and in helping each other to learn and problem solve (active and collaborative learning); and (ii) how often did they participate in sets of educational activities which helped enrich their knowledge and skills within different religious, cultural and work settings (enriching educational experiences). Further stratified by the secondary forms, significant increasing trends (from Secondary 4 to Secondary 6) were observed in the constructs of “self-direction”, “teaming and collaboration” ($p = 0.029$), “interpersonal skills” and “personal responsibility”.

The same statistical techniques were used for the distribution of the extent to which students found their experiences at school contributed to their knowledge, skills and personal development. Table 4 reports the results. When comparing the percentages of senior secondary students in this sample who chose the “quite a bit” and “very much” categories versus “very little” and “some” categories, it is found that a slim majority of them found most of their school experiences facilitative, except “acquired job or work-related knowledge and skills” and “solved complex real-world problems”. There was not any significant increasing or decreasing trend.

Second-order factor analysis was further conducted for the eight constructs of cultural literacy (Beauducel, 1997; Gorsuch, 1983). Confirmatory factor analysis (with maximum likelihood as method of extraction, followed by orthogonal rotation) produced a one-factor model and the model was a good fit (Chi-square = 373.465; $df = 20$; $p = 0.000$). A single score for cultural literacy was constructed and stepwise regression was performed on this score using the two benchmarks of student engagement and students’ evaluation of their school experience, together with the forms of students as predictors. Table 5 shows the summary of the stepwise regression model and cultural literacy could be explained strongly by seven out of ten predictors ($r^2 = 0.542$; $F = 245.027$; $p = 0.000$).

The two benchmarks of student engagement were important predictors of students' development of generic learning outcomes (with standardized beta weights of 0.271 and 0.246) as compared to their evaluation of school experiences. The school experiences included in the model were: "thinking critically and analytically", "learning effectively on your own", "acquiring job or work-related knowledge and skills", and "developing a personal code of values and ethics" (with standardized beta weights of 0.166, 0.109, 0.105 and 0.103 respectively). Variables that were excluded in the model were: "communicating effectively", "being creative" and "solving complex real-world problems". For the secondary form to which students belonged, since no significant increasing or decreasing trend was observed for the two benchmarks of student engagement and students' evaluation of their school experience, it was therefore considered as an independent predictor in the regression model and comparatively, much mild influence was evaluated on the predictor (with a standardized beta weight of 0.052).

Table 3.

Summary statistics of the eight constructs of cultural literacy scale and the two benchmarks of student engagement

Construct/Benchmark	Cronbach's alpha coefficient	Percentage				Mean (SD)				Trend analysis (p)
		Never	Sometimes	Often	Very Often	S4-6	S4	S5	S6	
Multicultural literacy	0.764	3.7 %	43.8 %	44.8 %	7.8 %	2.56 (0.62)	2.54 (0.63)	2.57 (0.63)	2.58 (0.59)	0.316
Global awareness	0.802	6.4 %	52.1 %	35.6 %	5.9 %	2.42 (0.65)	2.41 (0.65)	2.41 (0.64)	2.43 (0.64)	0.630
Self-direction	0.818	5.5 %	48.1 %	40.5 %	5.9 %	2.47 (0.65)	2.44 (0.63)	2.47 (0.66)	2.53 (0.64)	*0.025
Higher-order thinking and sound reasoning	0.774	6.6 %	51.5 %	36.6 %	5.3 %	2.41 (0.62)	2.39 (0.61)	2.39 (0.62)	2.46 (0.62)	0.058
Teaming and collaboration	0.784	4.0 %	42.2 %	47.5 %	6.3 %	2.57 (0.63)	2.51 (0.62)	2.61 (0.63)	2.59 (0.63)	*0.029
Interpersonal skills	0.789	4.0 %	38.2 %	48.1 %	9.7 %	2.63 (0.65)	2.58 (0.65)	2.66 (0.66)	2.66 (0.64)	*0.042
Personal responsibility	0.782	5.7 %	46.2 %	41.9 %	6.2 %	2.49 (0.64)	2.47 (0.65)	2.48 (0.64)	2.55 (0.62)	*0.039
Social and civic responsibility	0.829	12.3 %	48.8 %	33.8 %	5.1 %	2.33 (0.70)	2.34 (0.72)	2.30 (0.69)	2.35 (0.69)	0.864
Active and collaborative learning	0.813	3.2 %	62.2 %	32.1 %	2.6 %	2.37 (0.51)	2.36 (0.51)	2.38 (0.54)	2.37 (0.45)	0.717
Enriching educational experiences	0.812	8.0 %	62.1 %	27.8 %	2.1 %	2.24 (0.57)	2.24 (0.58)	2.25 (0.58)	2.24 (0.54)	0.966

When computing the mean, 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very Often

Table 4.

Summary statistics of students' evaluation of the extent to which experience at school contributed to their knowledge, skills and personal development

Area / Experience at school	Percentage				Mean (SD)				Trend analysis (p)
	Very Little	Some	Quite a Bit	Very Much	S4-6	S4	S5	S6	
Acquired job or work-related knowledge and skills	9.5 %	41.2 %	40.2 %	9.1 %	2.49 (0.79)	2.52 (0.78)	2.45 (0.79)	2.50 (0.79)	0.567
Communicated effectively	8.4 %	38.5 %	43.6 %	9.5 %	2.54 (0.78)	2.56 (0.79)	2.52 (0.78)	2.55 (0.76)	0.837
Developed critical and analytical thinking	7.6 %	35.6 %	45.8 %	11.0 %	2.60 (0.78)	2.59 (0.77)	2.58 (0.80)	2.64 (0.77)	0.305
Developed creativity	10.3 %	37.6 %	42.1 %	10.0 %	2.52 (0.81)	2.55 (0.82)	2.45 (0.80)	2.58 (0.80)	0.568
Learned effectively on your own	9.4 %	39.3 %	40.9 %	10.5 %	2.53 (0.80)	2.54 (0.81)	2.47 (0.81)	2.58 (0.78)	0.392
Developed a personal code of values and ethics	8.7 %	36.4 %	42.9 %	12.0 %	2.58 (0.81)	2.56 (0.81)	2.58 (0.81)	2.62 (0.81)	0.288
Solved complex real-world problems	12.5 %	40.3 %	39.0 %	8.2 %	2.43 (0.81)	2.44 (0.81)	2.40 (0.80)	2.45 (0.82)	0.922

When computing the mean, 1 = Very Little; 2 = Some; 3 = Quite a Bit; 4 = Very Much

Table 5.

Summary of stepwise regression model of cultural literacy by the two benchmarks of student engagement and students' evaluation of their school experience

Dependent variable: Cultural literacy (Model statistics: $r^2 = 0.542$; $F = 245.027$; $p = 0.000$)	Standardized β	t	p
Enriching educational experiences	0.271	11.930	0.000
Active and collaborative learning	0.246	10.705	0.000
Developed critical and analytical thinking	0.166	7.029	0.000
Learned effectively on your own	0.109	4.559	0.000
Acquired job or work-related knowledge and skills	0.105	4.718	0.000
Developed a personal code of values and ethics	0.103	4.333	0.000
Secondary form	0.052	2.900	0.004

Variables not included in the model: “communicating effectively”, “being creative” and “solving complex real-world problems”

Discussion

Referring to the first research question of “How well are senior secondary school students being supported by the NSS school curriculum to develop their generic learning outcomes for future challenges and how engaging is the NSS school curriculum?”, results showed that the situation was less optimistic.

Half of the students in this sample were not often equipped by these important outcomes and only mild increasing trends on several constructs were observed on students of higher forms. Generally speaking, the eight constructs of the cultural literacy scale represent the knowledge, skills, and characteristics that are necessary for individuals to comprehend a variety of situations; situations which require them to put forth their views and qualities in order to communicate and work with others. In addition, percentage distributions of the two benchmarks of student engagement suggested that learning was not active/collaborative enough for the students in this sample, and that the learning process was not supported by sufficient educational experiences.

These important findings raised the question as to whether or not the NSS school curriculum is engaging enough in fostering students who have the skills necessary to meet future challenges and who have the flexibility and adaptability to embrace the rapid pace of change in society. The question goes beyond how schools are providing students with opportunities to actively/collaboratively learn, how students are participating in different educationally purposive activities and how schools are facilitating them to behave “literally”. The main concern is how the NSS school curriculum is being passed to students through different curriculum techniques and initiatives. For example, according to the Curriculum and Assessment Guide (CDC & HKEAA, 2007), the core subject of Liberal Studies should broaden students' knowledge base and enhance their social awareness by providing them a wide range of issues. Themes that are of significance to students should include the society and the world, and the course must enable students to make connections across different fields of knowledge in order to broaden their horizons. Overall, the learning experiences provided by the course should foster students' capacity for life-long learning so that they can face the challenges with confidence now and in the future. The aims of this course are explicitly stated, but problems arise on how the curriculum is being structured.

With the goodwill and intent to cover a wide range of topics (e.g., personal growth and development in today's society in Hong Kong and modern China, globalization and many global issues), a huge body of information is included in this new core subject. Given that the breadth and depth of each topic is important and that each topic should be equally presented, it is questionable whether students can make use of their higher-order cognitive skills, such as the ability to analyze, evaluate and problem solve, to construct their own understanding. What students need are skills, not facts. Liberal Studies being a compulsory examination subject, it is questionable whether students would tend to focus only on the scores rather than the learning outcomes. To achieve the set outcomes, Liberal Studies demands students to participate in different forms of inquiry-based pedagogy. This might have created new possibilities for students to independent learn, however, Fung's (2014) five-year longitudinal study disclosed the “reality” (vs. “expectations”). Students on one hand were confused with the assessment methods and worried of not having enough time to prepare for the public examination on the other.

Thus, students might tend to be more technical as a result of rote memorization and reciting all their “learnt” information in a public examination in order to be awarded a satisfactory result and thus advance to the next level of learning.

Referring to the second research question of “How facilitative are the school experiences for senior secondary school students to develop a broader knowledge base and to provide them with a solid foundation for whole-person development?”, results again showed that the situation was less optimistic. Only a slim majority of the senior secondary school students found their school experiences facilitative and there was not any increasing trend on this school experience from lower to higher forms. The two areas that need much attention are “acquiring job- or work-related knowledge and skills” and “solving complex real-world problems”. These results may be related to the focus of the Applied Learning (ApL) courses in the NSS elective subjects.

Applied learning, by definition, aims to offer students “with stronger elements of practical learning linked to broad professional and vocational fields” (EDB, 2013). Through application and practice of knowledge and skills in an authentic context, students should have been fostered with the necessary generic learning outcomes to demonstrate work and life competency and to solve real life and work problems.

Questions arise as to how best to describe the curriculum goal and how best to structure the curriculum in order to achieve this goal. It is debatable whether the ApL curriculum should be structured in a way that assimilates authentic work sectors, for example, in fostering students to have the skills to secure job employment by eliminating unwanted work habits and behaviours. The focus still is on facilitating students’ development of generic learning outcomes and making sure that all learning elements are organized in a way that best facilitates and empowers students with such knowledge and skills (Bowers, 2006). An outcome-based approach is methodical because it starts with what students are expected to learn, then makes a comprehensive effort to create a teaching and learning environment which is supported by different learning activities and assessment strategies that help students to reach their learning goals (Kennedy, 2009).

In Killen’s (2000, p. 1) words, outcomes are expressed in terms of “what students know, are able to do, or are like as a result of their education”. Educators and teachers should start thinking of curriculum from another perspective – as what students need to achieve. This approach is also known as the “backward design” that demands a shift from “teaching” to “learning,” from teacher-centeredness to student-centeredness (Wiggins & McTighe, 2005). The NSS school curriculum should therefore aim at organizing the best learning opportunities and contexts for students to demonstrate the preferred generic learning outcomes and performances. Curriculum context is different from curriculum content; content is what curriculum makes for students and context is what curriculum means to students.

A balanced curriculum of providing students’ with an increase in their knowledge, skills and personal development is an entitlement for all. The curriculum should go beyond “breadth” (how broad should the scope of a curriculum be?) and “depth” (how deep should the mastery of knowledge and ideas be?). In order to increase students’ knowledge in their school experiences, for example, Bereiter (2002) has made an interesting suggestion that the best way to prepare students to learn and work with knowledge is by means of “enculturating” them with “conceptual artifacts.” Conceptual artifacts are not just theories, factual assertions, histories, interpretations, and many other products of human thought, but also include unsolved problems, discredited theories, and new ideas. As Illeris (2009) declared, learning should be both an external interaction process between a person with the social and material environment in a particular culture, and an internal cognitive, psycho-biological process of acquisition that elaborates and internalizes such external interaction by driving forces such as emotion, motivation, and volition. The organization and learning of knowledge and skills should surpass a “referent-centered” model which aims to convey content-specific knowledge, to a “problem-centered” model which favors solving world problems. As stated by Parsons and Beauchamp (2012, p. 134): “The progression is not from the home out into a wider and wider world; it starts with the whole world and the progression is toward deeper and deeper levels of understanding.” Since a key focus of a curriculum is to ensure that the whole education system demands students to be able to show the generic form of learning explicitly, students should have applied what they have learnt in the school and transfer those learning and experiences to all different life and work situations. Schools, therefore, should focus primarily to build up students’ capacities to create solutions for the impact of a globalized market on economic and social development and to promote the public good.

Roegiers (2016, p. 24) in his UNESCO Report highlighted the concept of “situational competencies”, which goes beyond “generic competencies” by giving students not just the “educational/technical content and context” but also the “situation” to act. Situational competencies “are only meaningful if characterized by a family of situations to be handled, this family of situations being delimited by a set of contents supposedly acquired by the learner and that he or she must reinvest in situations”. The situations should be “complicated enough but not too complicated, complex enough but not too complex”. To facilitate students to transfer the learnt knowledge and skills from one situation to another, only the situational competencies permit “a power of action” because students are being activated in all those varied situations to act out the learnt “generic competencies”, such as “being open, assertive and creative, of seeking information, of paying attention to detail, of having scientific rigour, etc”. Success is achieved when schools can extend student learning beyond the set curriculum and that students can integrate all learnt skills for any global agenda of knowledge transformation and creation.

Based on the non-optimistic results of students’ cultural literacy, student engagement and school experiences related to their knowledge, skills and personal development, we are concerned about the government’s official claim regarding the success of the implementation of the core subject of Liberal Studies and the Applied Learning courses in new academic structure. The progress report (CDC, HKEAA & EDB, 2013, p. 9) stated that the courses have broadened students’ academic and non-academic learning experiences and generic skills and appeared that “the NSS has had a beneficial impact on students’ generic skills of communication, critical thinking and creativity, and they have developed positive values and attitudes, such as integrity, sense of responsibility, and love and care for others”. Therefore, it is suggested that a more systematic evaluation of students’ performances and more critical dialogue between teachers and the key stakeholders on the impact of curriculum on students’ learning should be made to pave the way for a student-centered and outcome-based curriculum.

Referring to the third research question of “How does senior secondary school students’ engagement in the NSS school curriculum associate with their development of generic learning outcomes?”, the regression model further conveyed an important lesson to the effect that student engagement could better facilitate their development of generic learning outcomes, with the adjustment of the influence of different forms of students. The two benchmarks of “enriching educational experiences” and “active and collaborative learning” deserve much closer examination.

First, students learn more when they are actively involved in thinking about, and applying, what they are learning in different settings. Also, students are more prepared to handle future problems when their learning in schools requires them to collaborate with others in solving problems and in mastering difficult learning materials. Second, learning will be more meaningful and useful when it is complemented with diverse educational experiences inside and outside the classroom. Such experiences will provide students with opportunities to synthesize, integrate and apply their knowledge to life settings. As to the other predictors, it is important to note that not all “school experience” can predict students’ generic learning outcomes. Hence, when resources are limited, school administrators and curriculum planners should have more discussion with teachers and key stakeholders in order to determine a priority to nurture students’ development and quality education.

By examining the variables from the contextual/environmental system, this study showed that student engagement provided by their school and their knowledge, skills and personal development from their school experiences were associated with students’ generic learning outcomes under that NSS school curriculum. This study suggested that the implementation of the core subject of Liberal Studies in the NSS school curriculum could be improved because as Fung and Howe (2012) indicated, the course Liberal Studies should foster students’ critical thinking and that critical thinking is considered as a generic construct in which a wide range of dispositions and abilities are included. Moreover, Cheng and Lee (2010) stated that one of the aims of Liberal Studies should be to develop students’ critical thinking ability, and the course should include social and contemporary issues from multiple perspectives. In this rapid changing world, all these are necessary to foster students’ cultural literacy in their generic learning outcomes.

Results of this study are important not only for educators in Hong Kong, it is also significant for educators around the world. Due to globalization, things that happen in one country can have a direct impact on other countries. For example, the changing of the new academic structure of 6 year secondary education and the results of the HKDSE (Hong Kong Diploma of Secondary Education), the admission procedures and policies of other countries will need to be revised in order to give education offers to the most appropriate students from Hong Kong.

This study provided insights to educators of other countries that it is important to ensure from different stakeholders in the education system that the outcomes of any education reforms are in line with the original aims of the reforms. It is necessary to develop students' generic learning outcomes and cultural literacy in every location for students' survival of the future world (Hirsch, Kett & Trefil, 2002), educators from around the world can be inspired by the implementation of Hong Kong's NSS school curriculum. In summary, this study urged educators in Hong Kong to reexamine the NSS school curriculum in order to bring out the necessary generic learning outcomes and cultural literacy of students.

Finally, referring to the contributions of this study from the curriculum evaluation perspective as Banks (1991) mentioned that curriculum reforms should foster cultural literacy, it showed that the NSS school curriculum did not seem to equip students with the generic learning outcomes of cultural literacy, student engagement and the knowledge, skills and personal development of students' school experiences.

Conclusion

The wave of rising quality education in Hong Kong, which is occurring in order to meet the global education reform agenda of lifelong learning, already stresses the importance of developing students' generic learning outcomes. This paper aims to assess this development with reference to the reform of the New Senior Secondary (NSS) school curriculum. The results of a survey of 1,715 senior secondary school students from nine local schools indicated that they did not satisfactorily demonstrate competency in skills that are used to comprehend the demands of most work and life situations. Criticisms fall not on the intentions of the NSS school curriculum but the way in which schools structure students' learning inside and outside the classroom. Students' learning experiences are of the utmost concern and schools have to ensure that those experiences are meaningful and useful for students, in order to develop the generic outcomes for future challenges. Students should be given opportunities to actively/collaboratively learn for success, and by and large to practice and apply the learnt generic skills to different learning and work contexts.

Although this study employs a purposive sample, the suggestions to look closely at students' development of generic learning outcomes and to examine thoroughly the NSS school curriculum are valid. Schooling serves to empower individuals to realize whole-person development and to provide a society with the population and workforce for continuous and sustainable development. Students are a most valuable human resource. From the macro analysis, it is recommended that a clear focus on generic learning, both in the curriculum and evaluation of outcomes, would guarantee more Hong Kong to become a world-class knowledge-based economy.

Notes

1. Part of the data of this study was reported in the 2013 Asia-Pacific Education Research Institutes Network (ERI-Net) Regional Study on Transversal competencies in education policy and practice: Regional synthesis report (Phase I) (UNESCO, 2015).
2. The Qualifications Framework (QF) was officially launched on 5 May 2008. It aims to help Hong Kong people set clear goals and directions for continuous learning to obtain quality-assured qualifications. In the long run, it will help to enhance the overall quality and competitiveness of the local workforce. The QF in Hong Kong is a seven-level hierarchy of qualifications covering the academic, vocational and continuing education sectors. To learn more, please visit: <http://www.hkqf.gov.hk/>.
3. For details, please visit: http://334.edb.hkedcity.net/doc/eng/infoSheet/LS_S4_e.pdf
4. The Quality Education Fund (QEF) was established by the Education Bureau (EDB), Government of the Hong Kong Special Administrative Region in 1998. The aim of the QEF is to support non-profit making initiatives that promote quality education in Hong Kong within the ambit of basic education, i.e., pre-primary, primary, secondary and special education. Since its establishment, the QEF has supported over 8,000 projects with grants amounting to more than HK\$4 billion. To learn more, please visit: <http://www.qef.org.hk/>. The QEF project "Applying knowledge management practices in school education for sustainable development" aimed to help schools to institutionalize the knowledge management system in their organization for sustainable development, and to strengthen their school capacity in management, teaching and learning, and student support via knowledge management.

5. Direct subsidized schools are allowed greater flexibility in resources deployment, curriculum design and student admission, etc. In terms of financial resource, the government provides subsidies and the schools can also collect school fees for extra support services and school facilities (EDB, 2015). On the other hand, aided schools are mostly run by charitable and religious organizations and they are fully subvented by the government and adopted the local curriculum as suggested by the Education Bureau (Hong Kong Asia World City, 2015).

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