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System capacity building in Hong Kong education reform: Strategies, challenges, and achievement

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Abstract:
System capacity has been well discussed in the western context and there are much evidence to support that the process of system capacity building is complicated. However, less research about system capacity building has been conducted in the context of eastern countries and regions. Hong Kong has it's own way of system capacity building in the field of education. This article identified the strategies of system capacity building under the background of Hong Kong education reform including the curriculum reform, evaluation reform, teacher professional development and technology information implication in education. At the same time, achievements and challenges of system building in Hong Kong will be thoroughly discussed in this article as well. This article will make a contribution on understanding the theory of system capacity building in the context of the mixed culture in Hong Kong.

1. Introduction

After entering the 21st century, the students are gradually facing more pressure form the globalized world. The whole society, including politicians, school managers, educators, parents, and students as well, have called for the education reform especially for the curriculum reform which is regarded as an efficient way of improving students' academic achievement. With this background, Hong Kong' s educational model offers a dynamic synthesis of Eastern structure and Western creativity. It equips students with the ability to think critically, act responsibly, and adapt easily across cultural contexts. This fusion fosters a new generation of learners who are not only academically capable but also innovative, empathetic, and globally minded-a skill set essential for the modern world. In response to the requirements of the new era and increase the students' quality from the system level, Hong Kong government has conducted the education reform in the territory of Hong Kong. In the year of 2001, the Hong Kong government published an important policy document named as Learning to Learn-The Way Forward in Curriculum Development (Curriculum Development Council, Education and Manpower Bureau, HKSAR, 2001). By analyzing strategies, challenges, and achievements of the most recent Hong Kong education reform, an international literature will be provided with an mixed culture perspective to understand the large scale education reform.

2. Background

There are three waves of education reform in the international context since the 1970s. The first wave of education reform conducted from the 1970s which focuses mainly on internal effectiveness, in this period, the main efforts are made to promote the internal school performance especially for the methods and processes of teaching and leaning in the school area in order to achieve the school goals and objectives. Improvement of teaching and leaning ability of teachers and students had been a popular target for the educational reform in the first wave. The second wave, which emphasizes interface effectiveness, pays more attention on the accountability to the public and stakeholders' expectation in the 1990s (Cheng, 2003). According to Cheng & Townsend (2000), the second wave of education reform focuses on enhancing

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existing structures, organizations, and practices across various educational levels to better align with the needs and expectations of stakeholders. However, with the rapid advancement of the economy, globalization, and information technology, there are growing doubts about whether the initiatives from the first and second waves can adequately address the demands of the modern era. In this context, the third wave of education reform, which prioritizes future effectiveness, is gaining momentum. This wave is characterized by a pursuit of new visions and goals across various educational levels, a focus on lifelong learning, an international perspective, global networking, and the integration of information technology in schools, all of which are considered key indicators of this reform movement (Cheng, 2001). These three waves of education reform generally depict the education reform trend and the key paradigms of various education reforms in an international context in these years.

Hong Kong, as an international city, was facing a very complex challenge at the start of 21st century. On the economic side, the knowledge-based economy has already become the mainstream of economic development, and the trend of globalization also made a great challenge for Hong Kong. Meanwhile, Hong Kong underwent a significant political transition in July 1997, shifting from a British colony to a Special Administrative Region (SAR) of China. In this context, policymakers and the public developed new expectations for the future of education (Cheng, 2001). Moreover, the social stratification structure was changing rapidly, and the disparity between the rich and the poor is urgently to be eased. Additionally, the rapid advancement of information technology has introduced new disruptions to the people of Hong Kong (Fok & Ip, 2010). Similar with the international context, Hong Kong education reform experienced the first two waves and it is also necessary for Hong Kong to move forward to the third wave of education reform (Cheng, 2001). According to Cheng, the first wave of education reform in Hong Kong was based on the assumption that policymakers had clear educational goals and plans to improve school performance. A top-down approach was applied within the school system, with most initiatives focused on external interventions or increased resource investment. Unexpectedly, the outcomes of the first wave of education reform in Hong Kong were limited. The primary reasons for its limited and fragmented impact were a lack of a solid knowledge base and research, neglect of school processes, and insufficient consideration of school-based needs.

Drawing on the experience of the first wave of education reforms, the Hong Kong Education Commission published No.7 Report, Quality School Education (1997) which means the start of the second wave of education reforms. Several main strategies of second education reforms have been implemented in Hong Kong education system including school-based approach, bottom-up approach, quality assurance and accountability, awareness of the need of research, and future outlook (Cheng, 2001). Although some of the problems in the first wave of education reforms has bee solved, some challenges still existed (Cheng, 2001) and the third education wave of education reforms are necessary to be implemented in Hong Kong. At this point, the Hong Kong government published a new document about the education reform. According to the document named Learning for Life, Learning through Life which is published by Education Commission in the year of 2000, the main concern of this education reform consists of seven dimensions, including the reform of the admission systems and public examinations system; the reform of curriculum and improvement of teaching methods; the improvement of the assessment mechanism to supplement leaning and teaching; the formulation of an effective resource strategy; the enhancement of the professionalism of teachers; and the implementation of measures to support front-line educators. The vision of the education reform encompasses six key dimensions: fostering a lifelong learning society, enhancing the overall quality of students, promoting a diverse school system, creating an engaging and inspiring learning environment, emphasizing the importance of moral education, and building an education system that balances rich traditions with a cosmopolitan and culturally diverse outlook.

Under this unique condition, as mentioned above, the education reform has been conducted from the end of last century, in this article, this educational reform will be reviewed with the perspective of system capacity building, which will make a contribution on understanding the theory of system capacity building in a multicultural environment.

3. Conceptual framework and literature review

3.1 System capacity and system capacity building

Capacity, actually, has already been narrated as a generic and holistic concept by these researchers. Stoll (2010) pointed out that capacity in the educational context can be regarded as "the power to engage in and sustain leaning of people at all levels of the educational system for the collective purpose of enhancing student learning". It is a quality that allows the individuals in the system to learn from the world around them and to apply this learning to new environments in order to achieve a continuously learning until they achieve their goals in an ever-changing context (Stoll & Earl, 2003). Fullan (2010) suggests that capacity refers to the ability of individuals or organizations to implement necessary changes, involving the development of knowledge, skills, and commitments. However, this definition has not noticed the cultural sensitivity of capacity. For instance, in Chinese culture, system capacity might incorporate the meaning of how organization responds to the external challenges, builds up internal synergy, and emphasizes holisticality and interconnectedness of system. Some of the scholars believe that capacity building is a crucial way of educational change through promoting the ability of the members within the whole system. For example, Hopkins and Jackson (2013) define capacity building as an approach aimed at enhancing the ability of school members to collaborate effectively by equipping them with the skills to identify problems, develop solutions, and plan for the future. According to Fullan (2010, p.57), capacity building involves competencies, resources, and motivation. It primarily focuses on the ongoing development of knowledge and skills necessary

for accomplishing important tasks collaboratively.

Taken together, capacity building is not a single process, it is a continuous process that allow all of the individuals, groups, organizations and societies promote the development of their ability in order to identify and meet the new challenges (Adedokun & Oluwagbohunmi, 2015). Five dimensions has been mentioned by O'Day and his colleagues (1995) to describe the concept of educational system capacity building, including vision and leadership, collective commitment and cultural norms, knowledge or access to knowledge, organizational structures and management, and resources.

Fullan (2006) has developed the system capacity building theory. System capacity building theory suggested that the system capacity building would make great significance of the education development: it produces higher levels of education performance on important cognitive and social goals, can help to reduce the gap between students of different background or abilities, helps students to improve their learning and progress continuously at a comprehensive level, and enables students to raise the bar and close the gap of student learning. Sharratt (2009) argue that the system capacity building should be broad (every school) and deep (every classroom). In this article, Fullan's definiation of system capacity building will be adopted in this article to explore the system capacity building in Hong Kong education reform.

3.2 The strategies of building system capacity

Many researchers believe that capacity building is a complex process. Sharrat and Fullan (2009, p.8) pointed out that capacity building "is a highly complex, dynamic, knowledge-building process, intended to lead to increased student achievement in every school" . Fullan (2000) suggested that the outside factors are gradually affecting the school operation, five main forces come from outside of the schools should be helpful to turn to schools' advantage including parents and community, technology, corporate connections, government policy and the wider teaching profession. Meanwhile, the inside context also affects the student's academic performance in schools, for example, form a professional learning community, focus on student work (through assessment), change the teachers and administrators' instructional practice accordingly are all regarded as the strategies which will be helpful for students' leaning. Stoll & Bolam (2004) also made an evidence to indicate that the process of capacity building involves both internal development and external support. CCapacity building should emphasize establishing and sustaining the essential conditions, culture, and structures needed to support learning. This includes providing skill-oriented experiences and opportunities, as well as ensuring effective interconnections and synergy among all the components involved, After that, Stoll, 2009 made some certain suggestions of school improvement and capacity building such like contextual capacity building, focusing on supporting instructional improvement, paying attention on both present and future development, developing leadership capacity, lateral capacity building, and systemic capacity building and etc. . In addition, Fullan (2009) claimed that there are six key areas should be paid efforts to achieve the sustainable improvement, including develop collective capacity to impact results, reframe perspective-create collective focus, reduce distracters, shift the balance of capacity building and accountability, constantly develop knowledge and skills, and foster mutual allegiance and collaborative competition. Developing school environment, instructional improvement, promoting collaboration, cultivating capacity to meet future challenges are crucial for the capacity building in the capacity building.

Meanwhile, many of the system capacity building pay much attention on the development of individuals (Massel, 2000; O'Day et al., 1995). It is well recognized that teachers' capacity plays an important role in the process of building education system capacity (Copland, 2003; Mathur, 2009). O'Day et al. (1995) suggest that the teachers' capacity can be considered in four dimensions, including knowledge, skills, dispositions, and views of self. Meanwhile, by analyzing the system education reform in California, Michigan, and Vermont, O'Day et al. (1995) point out four main strategies which will have positive effect on building teacher and organization capacity to achieve goals of standards-based reform. Articulating a reform vision, providing instructional guidance, restructuring governance and organizational structures, and establishing evaluation and accountability mechanisms are all mentioned as the four strategies to promote student learning and then achieve the goals of system education reform. Furthermore, according to O'Day et al. (1995), the system capacity can be increased by improving performance of the employees (such like school teachers); by adding teaching resources as human resources, materials, or technology; by restructuring how to organize the work form systematic level; and/or by restructuring how to deliver the services. By observing the education reform in 22 districts in eight different states of the USA, Massell (2000) claim that there are four strategies these 22 districts usually used to increase the school capacity, and building teacher knowledge and skills is listed as one of the main factors. From this point of view, teachers' professional development is essential for the capacity building (Mathur, 2009; King, 2001). Extending from the definitions above, Mathur (2009) indicate that keeping with evolving student needs, getting up to learn the new policies and laws, getting the newest information about behavioral interventions and instructional strategies, and being familiar with more about evidence based practices are regarded as the main focus of teachers' professional development which will be definitely helpful for the system capacity improvement. By synthesizing the discussion above, it is clear to find out that improving teacher professional quality is the main aim of individual capacity building.

Individual's professional development is essential for the system capacity building, however, the learning communities' connection also cannot be ignored. It is easy to find leaning communities at all level of the educational system (Fullan, 2000; Stoll, 2010; Stoll & Bolam, 2004), such like classroom learning communities, teaching practice communities, professional learning communities, policy learning communities and etc. The main purpose of building learning communities is not only share commonalities with school-based

professional learning communities but also enlarge individual schools' repertoire of choices, and spread the good ideas and practice to the whole system in order to promote the process of system capacity change and improve the learning for all students within the system. Meanwhile, not only the learning communities conducted in schools, parents and the wider community can also make contribution to students' learning and system capacity building (Mulford, 2007). The research from Harris (2011) also mentioned that the collective capacity building will make a difference in the process of system capacity building. With the development of learning community research, the relationship between learning and community becomes multifaceted and multi-directional (Stoll, 2010) like learning of community, learning from community, learning with community, learning for community and learning as community. It is suggested a common culture, trusting, respectful and equal relationships, supportive structures, and leadership and external facilitation are essential to conduct the learning communities' connection which will be benefit for the system capacity building.

Education reforms in Western countries have often included capacity building. For example, in NPEC (2013) conducted a case study of district-based reform. The main strategies of the reform including envisioning the components of high-quality instruction, building both the commitment and capacity of employees across the system to realize this high-quality instruction, providing people with information to inform their practices, monitoring the implementation of the instructional vision, and finally, facilitating ongoing deepening of the implementation and refinement of the vision, as well as understanding of its implications. After 5 years of sustainable work on this district-based capacity building, students had made great progress. More students received a C or above on the state assessment in 2003 than in 1999, and in 2005, no school received an F in the state accountability system. However, as Dobie (2004) suggested, it take a long time to demonstrate whether particular strategies work to build system capacity; similarly, Sharratt (2009) said, it is 'not so fast'. The process of system capacity building is not an easy process, actually, the experience of implementing change is always characterized by accomplishment, uncertainty, conflict, and surprise (Cheung & Wong, 2012), as well the educational reform of Hong Kong. The main purpose of this research is to dig out the certain strategies of Hong Kong education reform which is related to the system building theory and see whether the theory from the western perspective could also fit for the eastern context.

There are two main reasons to select Hong Kong as location of the research: the first one is because that the after conducting the most recent education reform, the students' performance has get a great progress no matter in the local test or in the international competition; however, there is also a lot of problems existing in Hong Kong education and some of the problems may lead to the unexpected consequences. Just as mentioned above, due to the complex social background and the challenge coming along with the new era and globalization, there is no doubt that the context of Hong Kong education reform should be unique and it is valuable to figure out the strategies, achievements and challenges of this process. In this paper, Hong Kong education reform will be explored with a view of system capacity building, by comparing with the international literature, the innovations of Hong Kong education reform will be analyzed and the challenges will also be listed under the background of the long period reform. While Fullan's theory provides a strong foundation for educational reform through collaboration and capacity building, it needs significant adjustments to align with Hong Kong's unique political and cultural landscape. The key lies in adapting Western frameworks to local realities by recognizing the influence of hierarchy, political constraints, language diversity, and societal pressures. A hybrid approach that respects cultural values, leverages central leadership, and strategically fosters localized innovation would make Fullan's framework more effective in Hong Kong.

4. Research method

The paper combines analysis and description as research method. It makes use of the data as well as the global literature on Hong Kong system-wide reform to analyze the strategies, achievements and challenges of the recent Hong Kong education reform. In this research, Hong Kong is regarded as a case to explore how to improve the education quality from the perspective of system capacity building.

5. Strategies in building system capacity in Hong Kong education reform

5.1 Curriculum reform in Hong Kong

Influenced by the education reforms initiated by the Education Commission in 1999 and 2000, the Curriculum Development Council released a proposal in November 2000 titled Learning to Learn: Lifelong Learning and Whole Person Development (Curriculum Development Council, 2001). The primary objective of this proposal was to ensure that the existing curriculum framework aligns with student development needs and promotes holistic development and lifelong learning. Based on practical experiences in schools, local research, the policy environment in Hong Kong, and global viewpoints, the Curriculum Development Council proposed strategies for three phases: the short-term phase (2001-02 to 2005-06), the medium-term phase (2006-07 to 2010-11), and the long-term phase (post-2011). These recommendations were aimed at stakeholders involved in curriculum development, including the government, schools, teachers, teacher educators, parents, and the wider community.

In the short term, essential reform tasks included Moral and Civic Education, promoting a Reading Culture, Project-Based Learning, and the integration of Information Technology. The Curriculum Development Council also established a curriculum framework as the foundational structure for learning and teaching at all school levels. This framework comprises three interconnected components: Key Learning Areas, Generic Skills, and Values and Attitudes. The Key Learning Areas include Chinese Language Education, English Language Education, Mathematics Education, Personal, Social

and Humanities Education, Science Education, Technology Education, Arts Education, and Physical Education, which should be integrated into the learning experiences of both primary and secondary students.

Generic Skills are abilities that improve students' learning potential. These skills are developed through instruction across various subjects and can be applied in different learning contexts. The nine identified generic skills include collaboration, communication, creativity, critical thinking, information technology, numeracy, problem-solving, self-management, and study skills. Values and Attitudes are viewed as interconnected and play a crucial role in the learning and teaching process.

Implementing this curriculum framework is a large-scale initiative that requires more than just individual school efforts. The government has introduced multiple measures to support the curriculum's implementation across diverse school environments. These include curriculum resources and support materials, collaborative research and development (''seed'') projects, professional development programs for teachers and principals, library enhancements, school-based curriculum support, creating time and space for teachers and students, dissemination strategies and networks, and the involvement of local and international consultants.

The education reform also addressed senior secondary and higher education. In 2014, the Education and Manpower Bureau (EMB) introduced a new academic structure, known as the 3+3+4 system, to replace the existing British system of 3+2+2+3. The formal announcement of this change was made in May 2005 (Education and Manpower Bureau, 2005). With this new system, students in Hong Kong would follow a revised senior secondary (NSS) curriculum that includes four core subjects—Chinese Language, English Language, Mathematics, and Liberal Studies—along with two or three elective courses chosen from a pool of 20 NSS subjects. This new structure aims to provide students with a broader knowledge base and prepare them for holistic development and lifelong learning. The reform also included several supporting measures, such as improving the teaching profession, redesigning textbooks, enhancing the quality of teaching and learning resources, and addressing issues related to school places, class size, class structure, teacher-to-class ratios, and funding (Education and Manpower Bureau, 2005).

5.2 Assessment reform in Hong Kong

Hong Kong is well known with an examination-oriented culture. Assessment is usually regarded as an efficient tool with the functions of selection and accountability, however, recently, a new function of assessment has been taken on by the policy makers and researchers-Assessment for Learning (AfL) (Stiggins & Chappuis, 2012; Stobart, 2008). It refers to a new way of implementing assessment -through the observation of the students' learning process, the teachers will have an overview about what students have been successful at and what kind of knowledge the students need to be improved and supported. This kind of assessment will provide the teachers and students with a clear direction to enhance the students' learning (Berry, 2011). Actually, the government of Hong Kong has launched a lot of initiatives to implement this way of assessment, for example, the Target Oriented Curriculum (TOC) in the last decade of 20th century and other reforms conducted in the early 21st century. However, these initiatives didn't get much great impact on schools' assessment practices (Morris & Adamson, 2010; Berry, 2011).

After 1997, Hong Kong has returned to Chinese sovereignty. The government determined to conduct a new round of reforms, including the assessment practices. Firstly, the government confirmed the function of examination, and believed that "Examination, particularly public examination, has always been the core of education systems in East Asian societies", moreover, the government stressed that "the public examination system in Hong Kong is generally considered as a fair and highly creditable mechanism" (p. 41). However, the government also realized that too much examination has brought students, parents, teachers, schools too much pressure and the education system "emphasize students' academic results rather than their overall performance". Through this way, too much attention of schools and teachers has paid on intellectual development of students' rather than the all-round development which is supposed to have ethical, physical, social and aesthetics training (p. 44). Under this background, the document made some suggestions. Firstly, the teachers can regard the assessment as a part of the curriculum, the major function of assessment is "help teachers and parents understand the learning, progress and needs of their students". Meanwhile, the teachers can also take the assessment results as reference to plan their teaching syllabus, to review and design teaching methods and to give a proper guidance to their students to promote their leaning efficiency and inspire them to exploit their potentiality fully. Secondly, Basic Competency Assessment (BCA) in Chinese, English and Mathematics has been proposed to place at various stages of basic education. The assessments are designed to administered centrally at Primary 3, Primary 6 and Secondary 3 to make sure that schools have met basic standards in key learning areas. Through analyzing the assessment results, schools can formulate plans to promote their teaching and learning method and model. The last suggestion of improving the assessment mechanism is to recommend to use multiple modes of assessment, such like flexible formative assessment, to reduce the quantitative evaluation. More analytical assessment should be given to students in order to give them a comprehensive evaluation.

In the year of 2001, the government introduced a new formative assessment method-School-based Assessment (SBA) into the Hong Kong education system. Different from the assessment method which focuses on reporting the achievement of the students, SBA pays more attention on supporting the students' learning process. As a part of Standards Reference Reporting, there are 5 levels for each subject in SBA, students will be scored on level of 1 to 5 and their result of SBA will go along with external examinations and finally towards to the formation of the final score (Berry, 2011).

In 2006, the Education Commission released the Progress Report on the Education Reform (4). According to the report on the assessment mechanism (Education Commission, 2006, Section 2), the Basic Competency Assessment consists of

the Student Assessment (SA) and the Territory-wide System Assessment (TSA). The SA is an online assessment tool designed to help teachers monitor students' progress and identify their needs and challenges in Chinese Language, English Language, and Mathematics. This allows teachers to provide timely support to enhance students' learning outcomes. The TSA, on the other hand, offers school management valuable data regarding students' performance at the end of each key learning stage (Primary 3, Primary 6, and Secondary 3) in these subjects. The TSA also serves as a useful reference for enriching the curriculum and improving the quality of teaching.

Fig. 1. School Development and Accountability Framework (EDB, 2003).

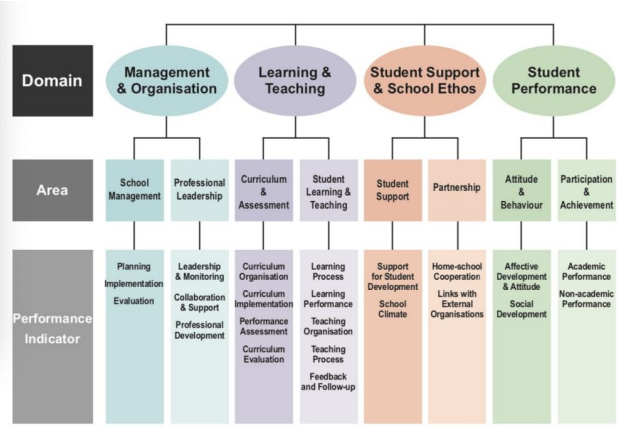

Fig. 2. Diagrammatic Representation of the Framework of Performance Indicators (EDB, 2016).

Regarding school evaluation, the Education Bureau (EDB) of Hong Kong introduced the School Development and Accountability (SDA) framework in 2003, which promotes systematic, evidence-based school self-evaluation (SSE) and external school review (ESR). In 2016, the EDB published the Performance Indicators (PI) for Hong Kong schools to support the implementation of the SDA framework. The PI framework is organized into three tiers: Domains, Areas, and Performance Indicators. It includes four domains, which are further divided into eight areas and 23 performance indicators.

5.3 Teachers' professional development

Teachers' professional development is considered a key strategy for building system capacity (Fullan, 2000; Mathur, 2009; King, 2001), including in Hong Kong (Cheung, 2008; Forlin, 2010). In November 2003, the Committee on Professional Development of Teachers and Principals published a document titled Towards a Learning Profession: The Teacher Competencies Framework and the Continuing Professional Development of Teachers. This document provides a model to guide teacher professional development by outlining "the competencies teachers should possess at various stages of their professional growth" and offering a template for schools to develop customized professional development frameworks suited to their specific student population, background, and mission.

The Teacher Competencies Framework outlines four key domains: teaching and learning, student development, school development, and professional relationships and services. It also presents strategies for implementing the framework, including a stipulation that teachers must allocate three days each year for school-based staff development activities. Furthermore, all teachers are required to engage in at least 150 hours of Continuing Professional Development (CPD) over a three-year period.

The framework further details how teachers should divide their time during this three-year cycle: a minimum of 50 hours should be devoted to structured learning activities (such as short courses, seminars, conferences, and workshops), while another 50 hours should focus on other CPD activities (such as sharing teaching experiences or serving as trainers or speakers at professional development events). The remaining hours can be flexibly allocated between structured learning and other CPD activities based on the teachers' preferences.

In the year of 2015, the newest report about teachers' professional development named as Odyssey to Excellence has been released (COTAP, 2015), in this report, a new project of teacher professional development called T-excel@hk has been raised. "T" here refers to "the teaching profession at various career stages, from student, novice and experienced teachers, to aspiring newly- appointed and accomplished school leaders" (COTAP, 2015). Eight dimensions have been mentioned in T-excel@hk project, including T-standard +, T-dataset PD, T-train, T-surf 24/7, T-craft3, T-share, T-applause and T-bridge. According to the document, T-standard + will be provided first as a useful conference and anchor for teaching preparation, T-dataset will be considered in the process of decision-making in order to get support by evidence. New types of programs will be explored under the project of T-train to meet the fast needs of teacher and school leaders and T-surf will provide a platform for the teachers to access to information on various teacher professional development programs, including those provided by the government, educational bodies, tertiary institution and non-governmental organizations. T-share aims to serve the opportunities for teachers and school leaders

to share their teaching experience and through this way, collaborative learning could be facilitated and innovations and improvement in pedagogy and student development can also be promoted. Meanwhile, T-craft will provide on-site support by COTAP for students, novice teaches, middle leaders and newly-appointed principals. T-applause is being set to highlight the achievements of distinguished teaches and other educators and raise the teachers' social status; T-bridge will provide a bridge to connect the theory and practice and try to meet the expectations and needs of schools and society better (COTAP, 2015).

5.4 Promoting Information Technology in education

To prepare for the global trend of leveraging Information Technology (IT) to enhance teaching and learning quality, boost students' lifelong learning capabilities, and promote holistic development, the Hong Kong government has invested over $10 billion since the 1998/99 school year in implementing three IT in Education (ITE) strategies and other e-learning initiatives (Education Bureau, 2015). These strategies were introduced in 1998, 2004, 2007, and 2015, respectively. The first strategy, titled Information Technology for Learning in a New Era: Five-Year Strategy 1998/99 to 2002/03, had several key missions: providing sufficient IT facilities, including network infrastructure, for students and teachers to access information; encouraging key stakeholders in the education system to embrace their evolving roles; integrating IT meaningfully into school education with appropriate curriculum and resource support; and fostering a community-wide environment conducive to cultural change (Education and Manpower Bureau, 1998). In 2015, the latest strategy, Realizing IT Potential, Unleashing Learning Power, was launched. This strategy introduced several new initiatives for schools in Hong Kong, such as improving IT infrastructure and re-engineering operational models, enhancing the quality of e-learning resources, updating the curriculum, transforming teaching and assessment practices, building professional leadership and communities of practice, and engaging parents, stakeholders, and the broader community (Education Bureau, 2015).

Moreover, in these years, the Hong Kong government is paying more attention on how to make AI help improve the students' class efficiency. AI is being heralded as the next big thing in technology, and Hong Kong's Education Bureau is working hard to develop the city's future AI expertise. In order to face the coming challenge, Hong Kong Education Bureau is gradually introducing the Junior Secondary Artificial Intelligence Module in the first half of year 2023, enabling schools to adopt prior to the 2024–2025 academic year. In this module, the information of AI conceptions, ethics, computer vision, computer speech, robotics and the effect of AI on society will be included. Tthrough developing the students' AI literacy, the computing thinking skill will be developed in Hong Kong students (news.gov.cn, 2023).

6. 6.Achievement in building system capacity in Hong Kong education reform

6.1 Achievement in curriculum reform in Hong Kong

Several documents from the Hong Kong Education Bureau indicate that curriculum reform has been shown through international surveys and research to positively impact students' academic performance. For instance, the Progress Report on the Education Reform (4) (Education Commission, 2006, p.7) reveals that many school principals in Hong Kong recognize the effectiveness of the education reform. They believe that a school-based curriculum is better suited to support student development and encourage the establishment of a comprehensive homework and assessment policy.

As part of this reform, students' holistic development has been advanced through five key learning experiences: Moral and Civic Education, Intellectual Development, Community Service, Physical and Aesthetic Development, and Career-related Experience. Concurrently, primary and secondary school principals have reported enhancements in their leadership abilities, professional development, collaboration with teachers, and understanding of curriculum development. Furthermore, over 70% of primary school principals and more than 50% of secondary school principals expressed positive views on students' progress in areas such as communication, critical thinking, creativity, self-directed learning, motivation and interest in learning, national identity, respect for others, responsibility, and overall academic performance since the implementation of the curriculum reform in 2001.

6.2 Achievement in assessment reform in Hong Kong

As reported in the Progress Report on the Education Reform (4) (Education Commission, 2006, Section 2), the online Student Assessment (SA) system was introduced to primary schools in June 2003 and to secondary schools in January 2005. By December 2006, over 60% of primary schools and 80% of secondary schools had implemented the SA system to support teaching and learning, earning recognition from international organizations. The Territory-wide System Assessment (TSA) was first introduced at the P3 level in 2004, and by 2006, all P3, P6, and S3 students were using it. The TSA has been instrumental in providing valuable data on students' basic competencies at key learning stages, representing a major step forward in promoting the Basic Competency Assessment (BCA). Through implementing the current assessment system, the students' academic performance has been improved at P3 and P6 in Chinese Language, English Language, and Mathematics. The improvement of students' academic performance has also been confirmed by the international evaluation organizations. For example, the Global Student Reading Competency Study in 2006 showed that Hong Kong's fourth-grade students' reading ability jumped from 14th in 2001 to 2nd among the 45 participating regions. Moreover, in the International Assessment of Student Competence, Hong Kong students ranked third in Mathematics, fourth in Reading Ability and third in Science. Compared with the result in 2007, all these three abilities of Hong Kong students have got a great progress.

6.3 Achievement in teachers' professional development

Teacher professional development play an important role in the educational system capacity building and it has been demonstrated that the teacher professional development lead to a positive effect on student learning. Hong Kong government has paid a lot of efforts on the teachers' professional development and the achievements should be admitted. Since the release of the document Towards a Learning Profession: The Teacher Competencies Framework and the Continuing Professional Development of Teachers (2003), three reports on teachers' continuing professional development have been published. The most recent report, released in 2009, indicated progress in teachers' professional development (COTAP, 2009). For instance, the professional development framework has been widely accepted by educators, with over two-thirds of teachers participating in more than 50 Continuing Professional Development (CPD) hours during the 2006/07 school year. Additionally, more than half of principals and a quarter of teachers believe that teacher participation in CPD has grown significantly. While most principals consider the requirement of 150 CPD hours over a three-year cycle to be appropriate, some teachers feel it is somewhat excessive. Despite ongoing debate about the quantitative requirements, the majority of principals and teachers maintain a positive attitude toward CPD, and most educators support the inclusion of all four domains of the Teacher Competencies Framework (TCF) in teachers' professional development.

6.4 Achievement in Information Technology in education

According to the government document, The First Strategy (1998/99-2002/03) has significantly promoted the development of IT infrastructure comprising hardware facilities, networks and Internet connection for schools. Until the year of 2015, four strategies have been published and the Information Technology has made an achievement which can support the students learn in a more scientific way.

According to the Fourth Strategy on IT in Education: Realizing IT Potential, Unleashing Learning Power (2015), through almost more than 15-year development, parents and communities have realized the importance of IT teaching and teachers also had a consciousness of how to teach more effectively through using IT infrastructure. According to the document, the schools' IT infrastructure has been upgraded over the years and it is convenient for students to access to computers in the school campus.

7. Challenges in building system capacity in Hong Kong education reform

It cannot be denied that the large-scale education reform in Hong Kong has achieved certain achievements, however, there are still some challenges and problems should be faced and solved.

According to Cheng (2009), the curriculum framework, which emphasizes on the development of school-based curriculum, was quite different with the previous model. Most of the schools and teachers had to spend much time and effort to learn and be used to this new structure and framework from the beginning, for example, learn the related ideas and skills from the school based training, re-develop the school subjects according to the new curriculum framework, and practice them in classes and improve the teaching efficiency by using the new framework step by step and etc. There is no doubt that such a large-scale curriculum reform conducted with other parallel initiatives imposed by EMB together will definitely increase the teachers' and schools' workload especially when the professional support, resources, time and preparation were still limited in its implementation.

The overload of teachers' work also makes an obstruction on the implementation of new Information Technology in education (Wong, 2016). Hong Kong implemented a whole-day schooling policy and the workload of teachers in the schools of Hong Kong is pretty high. Actually, the teaching task is heavy for the teachers: for a Hong Kong school teachers, 30 lessons per week and 40 minutes for each lesson is in general. The average capacity of each class can be about 35-40 students. In addition to teaching tasks, most of the teachers also undertake the non-teaching and administrative duties, such as community connection activities, school foundation activities, extracurricular activities, coordinating with parents and offering students guidance and etc. (Cheng & Walker, 2008; Wong, 2016). According to the study from Cheng & Walker (2008), around 50% of primary teachers indicated that the work-load of non-teaching work cannot be controlled and the overwork-related pressure reduced their enthusiasm on their work of teaching. Under this circumstance, it is difficult for the teachers to accept a new change with information technology. Another obstruction of implementing the Information Technology is the cultural aspects. It is well known that Hong Kong education system is still an examination-oriented education system, for example, for the primary students, their results of school-based assessments will be submitted to the EDB for the purpose of Secondary School Places Allocation (SSPA) (Lee, 2000). This determined that the teachers are stressfully to improve the students' academic performance for admittance to better school bands and less time and energy are prepared for them to explore the usage of the newest Information Technology.

The last but not least, global social discontent has also gradually spread to Hong Kong. Due to the complicated political background of Hong Kong, the pressure of social conflict has transmitted to almost every corner of the society, as well in the education sector. Teachers and educators may hold different political view and it cannot be avoid that their point of view will affect their teaching to some extent. In this kind of circumstance, how to make sure that the teachers and educators can insist on the basic responsibility of education should be the new mission of the teacher and educators in this new era.

8. Discussion and conclusion

This work mainly focused on system capacity building in the context of Hong Kong educational reform. According to it

analysis, the newest educational reform of Hong Kong mainly focused on four aspects including the curriculum reform, assessment reform, teachers' professional development, and information technology promotion (including AI) in the field of education. Some of the strategies are following the theory of capacity building, however, some of the problem of Hong Kong educational reform might add new elements to strategies of building system capacity. In this part, we will mainly discuss about the current situation of Hong Kong educational reform and compare the current situation with the western literature.

It is well known that the main aim of the curriculum reform and assessment reform is to reduce the students' and teachers' academic pressure and promote the students' development in a more comprehensive way. It cannot be denied that both curriculum and assessment reform has made great achievement, however, the students are still facing high pressure form various tests. The large population in Hong Kong can be regarded as one of the main reasons for the competitive educational resource. The students work hard to fight for a limited position in a traditional famous schools. The distance between the good students and not so good students will be lager and larger. From the perspective of social development, the current mechanism of Hong Kong education may become the origin of social unfairness. It stands on the opposite of Fullan's system capacity building theory which suggests to chase for smaller gap between the members within the organizations (Hargreaves, 2011). On the other hand, the achievements of the curriculum and assessment reform in Hong Kong deserve the attention from the western scholars. For example, the new design of the curriculum promote the transformation of teaching and learning style. According to Cheng (2014), the field of education has gradually accepted the change from "teaching" to "learning" which regard the students as the main body of school life. Although there are some differences in understanding of this new concept, the mainstream ideas of the whole education field have been transformed.

As for the part of teacher professional learning, the teachers in Hong Kong mainly take part in the professional development activities within school learning communities (Cheng, 2014), which has promoted the teachers' participation on the curriculum study and design. The international study has indicated that the collaboration practice should be regarded as one of the features to promote system capacity building. For example, McKinsey Education (2009) report that the collaboration practice always appears in the high-performing schools. According to their point of view, the collaboration practices "embed routines of instructional and leadership excellence in the teaching community, making classroom practice public, and develop teachers into coaches of their peers". There is no doubt that these practices will make a positive effect both on developing teachers' individual courses and sharing their pedagogic skills throughout the system. However, it cannot be denied that the frequent professional training will occupy much time of the teachers and definitely increase the amount of work and added to the teachers' overflowing plate. Under the background of high-power distance culture in Hong Kong, the teachers are hard to express their own opinion about the overloaded stress in their work which will definitely make a negative effect on the teacher capacity building. Therefore, how to balance the workload and the professional learning deserves more consideration.

The development of Information Technology in education has been regarded as a trend to promote students' academic performance. The government of Hong Kong has invested a lot on the comprehensive establishment of technology-enhanced education system. According to the studies, both teachers and students get befits from the educational technology development and believe that IT in education enhanced pedagogy quality and efficiency (Wang, 2019). However, the problems of the technology teaching is not very easy to implement and maybe it will add more burden for the teacher to prepare their lesson with technology. Moreover, the information technology is also used to make the large scale data analysis for students' performance which is widely used in the whole world and is examined will make a positive affect for the students' academic performance.

Conflict of interest

The authors declare no competing interest.

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