Leong Cheung tapped his lips and gazed out at the hot, humid Hong Kong May morning. In his mind, he replayed the update he’d just gotten. As the Executive Director for Charities and Community of The Hong Kong Jockey Club, Cheung led the philanthropic arm of a venerable institution that operated at the heart of Hong Kong’s civic life and, thus, at the intersection of diverse stakeholders’ interests. He and his team were skilled at juggling varied priorities. So this latest challenge was familiar—but that did not mean it was simple.

The latest challenge had to do with a program called CoolThink@JC. CoolThink@JC was an educational pilot dedicated to developing computational thinking in primary school students. Computational thinking, or CT, encompasses a broad set of problem-solving skills related to the formulation, implementation, and assessment of solutions to analytic challenges. CoolThink@JC had begun with an initial grant of HKD 216 million (about USD 30 million) in early 2016; this grant had gone toward convening a trio of world-class academic partners to develop and test a pilot CT curriculum in 32 Hong Kong schools. In order to be successful, CoolThink@JC’s pilot stage depended on effective adaptation and collaboration between these partners—and this was where the program had reached an impasse.

The crux of the issue was simple: the first round of teacher feedback had come in, and the consensus was that the pilot curriculum was overambitious. There was no ambiguity about whether this feedback should be heeded: in order to get the support of Hong Kong’s Education Bureau (EDB) and education sector, CoolThink@JC needed to earn general approval from the teachers in the pilot. Without the EDB’s support, the curriculum would never be systematically instituted across a greater number of Hong Kong’s schools.
The challenge was not, therefore, strategic: everyone agreed that the teachers’ reservations should be addressed. The challenge, the contours of which were familiar to Cheung and the CoolThink@JC team, was one of management and consensus building. The program’s pedagogical experts—established academics from three major universities in Hong Kong and the United States—were having a hard time coming into alignment on how the curriculum should be altered. With recent discussions taking them further away from agreement, time pressure was mounting: the new school semester would be starting in August, leaving little time to make significant revisions and get an updated curriculum to teachers in time to prepare.

This was the impasse that CoolThink@JC was facing.

Leong Cheung inhaled, thinking. The Hong Kong Jockey Club was one of Hong Kong’s most prolific and important institutions; its philanthropic activities did much to define the social sector in the city. Cheung and his team were determined to use that status to build collaborative consensus—even if that sometimes meant messy debate among partners—rather than force programs toward predetermined conclusions. But now, with CoolThink@JC, resolution and action were what was required. How, then, to facilitate a productive and amicable solution? How to manage the varied experts’ voices and views, to make sure that they all were and felt heard while maintaining the forward progress required for the pilot’s success? How could Cheung’s team resolve this impasse?

The Club and the Trust: A Brief History

The Hong Kong Jockey Club was founded in 1884, when Hong Kong was still under British colonial rule. In its original incarnation, the Club was an upper-crust society dedicated to the promotion of horse racing. Its character transformed completely over the twentieth century, but it remained a dues-paying membership society that never relinquished its focus on “racing events and racecourse entertainment.”1 It professionalized and formalized these activities, expanding the range of sports and entertainment it offered. By 2016, when the CoolThink@JC pilot program launched, the Club was running hundreds of races at its two major racecourses, including major annual events such as the Hong Kong International Races (HKIR).2

The Club also expanded into “responsible sports wagering and lottery.”3 It was the sole provider licensed by the Hong Kong government for on- and off-course wagering on horse racing; the Club had also, since the 1970s, run the Mark Six lottery4—an enormously popular game of chance (of the “colored balls drawn live from a transparent tumbler” variety). These activities—the membership club, horse racing, and wagering—provided The Hong Kong Jockey Club with a significant revenue stream.

The organization’s uniqueness, and the extent to which it was woven into the life of every Hong Konger, stemmed from the way its integrated business model utilized revenue generated from wagering and racecourse entertainment. The Hong Kong Jockey Club Charities

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4 Ibid.
Trust, or the Trust, was the formal legal designation for the division of the Club that engaged in philanthropy: since the early 1900s, the Club’s practice had been to take surplus revenue and deploy it “for the betterment of our society.” This was formalized in the 1950s, as Hong Kong responded to the destruction of World War II and the social changes that followed, and further formalized in the 1990s with the establishment of the Trust as a legal institution, inextricably linked by management and mission to the Club.

These two facets—the Club, with its horse racing and wagering; and the Trust, with its large-scale philanthropy—played an outsized role in Hong Kong society. In 2016–17, the Club’s racing entertainments and related activities were enjoyed by millions of locals and tourists; its tax payments of HKD 21.7 billion totaled about 7.5 percent of taxes collected by Hong Kong’s Inland Revenue Department that year. Similarly, the Trust’s philanthropic donations, totaling HKD 7.6 billion to 216 projects in 2016–17 (against total government expenditures of about HKD 360 billion), made it Hong Kong’s largest philanthropic organization and, in fact, one of the 10 largest private charities in the world.

Hong Kong’s Social Sector in 2016

Much of the Trust’s visibility and importance in Hong Kong society arose from its relationship with the government, both before and after Hong Kong’s transition to China in 1997. This relationship with the government was largely defined by what Hong Kong’s public sector does, and does not, provide.

Hong Kong’s public sector follows an “outsourced model” in the provision of social services: it plays the role of financier and regulator, supporting NGOs that in turn provide most of the social services. This is distinct from, but related to, the fact that Hong Kong has historically adhered to the idea of small government and thus spends less on social welfare than comparable economies do; much of this spending is through subvention (i.e., apportioned to NGOs in the social sector) rather than recurrent budget-line expenses (i.e., the institution of its own programs). In 2011–12, for example, the Hong Kong government’s total social spending was 7.6 percent of GDP. In comparison, Japan—Hong Kong’s neighbor, and another developed economy—spent 18.6 percent of its GDP on public-sector social welfare programs.

Throughout the twentieth century, as Hong Kong evolved into a major global commercial hub, the Trust funded numerous public works and infrastructure projects. Its importance was

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5 The Hong Kong Jockey Club. (http://corporate.hkjc.com/corporate/english/who-we-are/purpose-and-core-values.aspx)
6 The Hong Kong Jockey Club. (http://charities.hkjc.com/charities/english/charities-trust)
8 Ibid.
11 Alison Gordon, “Hong Kong Government Social Funds: Fit for Purpose or Time for a Re-Think?” Impact Investing Policy Collaborative, 2013.
12 Ibid.
13 Ibid.
accentuated by the fact that the social sector in Hong Kong was in a nascent state for much of this period and, perhaps surprisingly, remained thus in 2016. There were no other donor organizations of the Trust’s size or reach. Hong Kong’s eight major universities were all government funded, and no complementary big players—no established institutes, research centers, policy centers, or think tanks—had yet grown to a scale commensurate with the Trust’s.

**Changing Time, Changing Trust**

As Hong Kong transformed from 1884 to 2016, so did The Hong Kong Jockey Club’s philanthropic efforts as implemented through the Trust. Throughout the twentieth century, the Trust’s activity was focused on so-called hardware: in the eyes of many Hong Kongers, the Trust is iconically associated with its name on swimming pools, parks, and other public buildings and facilities. This also defined its relationship with the public sector. The Trust—and its historical antecedents, before formal incorporation—were not generally part of the government’s outsourcing model; rather, they funded and supported development and growth with their own philanthropic capital expenditures as Hong Kong matured into a major international center.

Starting in the 1990s, the value of shifting this approach became clear. Hong Kong’s hardware needs had diminished; the city was indeed a thriving international center with a built environment to match, full of multinational firms gathering *human* capital from around the globe. At the same time, Hong Kong’s development led to new, complex problems. These problems are familiar to many prosperous economies with aging populations: striving for social equity and social mobility, caring for an aging population, and preparing youth for a competitive and dynamic future.

As the need for the Trust to address these changes became clearer, its Board of Stewards moved to shift the organization’s outlook and direction. Throughout the history of the Trust and, more broadly, the Club, the stewards had served as a board of directors, overseeing and defining strategy and policy. The 12 stewards were each elected for a fixed term from and by the Club’s voting membership; many stewards sat for consecutive terms, giving the body continuity and institutional knowledge. Dr. Simon Ip—a lawyer, former member of Hong Kong’s Legislative Council, and horse-racing enthusiast—emerged as a leading advocate for reform of how the Trust pursued its philanthropic efforts. First elected a steward in 1999, Ip was elected Chairman of the Board of Stewards in 2014 in what was both a signal of the Club’s institutional readiness to examine the way that the Trust did its work, and a spur to initiate that transformation.

The Club’s non-steward leadership was also awake to these changes. Winfried Engelbrecht-Bresges, who had been appointed CEO of the Club in 2007, after a decade of leading its racing activities, was committed to assuring that the Club and the Trust were world-class institutions that (in different ways) contributed to a forward-looking vision of Hong Kong. Ip, Engelbrecht-Bresges, and the rest of the leadership saw that Hong Kong’s changing realities demanded systematic and thoughtful reinvention; for the Trust, this meant reevaluating the hardware-oriented view of philanthropy that had dominated its activities throughout the last half of the twentieth century. Stewards began asking whether the Trust’s focus on funding capital

construction projects was the most effective way it could be contributing; even more fundamentally, they began asking how the Trust could analytically evaluate its own performance and efficacy. The view emerged that the Trust had the potential—real, if unrealized—to rigorously evaluate Hong Kong’s social needs and thus improve its own ability to serve them. Ip summarized this strategic evolution thusly:

. . . a transition from the club’s traditional role as a provider of charitable funding to others, to becoming a proactive and transformative philanthropist in its own right, seeking out the root causes of social issues, and then working in partnership with the government and the community to resolve them.\(^{15}\)

Hiring Leong Cheung to lead the Trust, in 2014, was another important step in this transformation. Cheung brought with him a long history in management, private-sector thinking, social enterprise, and forward-looking philanthropy. A Harvard MBA, Cheung was an operating partner with private equity firm Bain Capital. Prior to that, he had had a consulting career at Boston Consulting Group and been Managing Director of Global Sourcing & Supply Chain at Esquel Group, a large textile and apparel manufacturer. In this latter capacity, he had led various corporate social responsibility and philanthropic initiatives. From there, he moved on to his own ventures in youth development by launching a social enterprise, RunOurCity, and then continued this work helping other entrepreneurs with Social Ventures Hong Kong.

So, by fall 2014, the Trust had leadership at all levels—Chairman of the Board, CEO of the Club, and Executive Director responsible for the Trust—committed and ready to affect its transformation.

They started right away. On Cheung’s second or third day, Ip and Engelbrecht-Bresges tasked him and his team with developing a strategic plan for this reorientation of the Trust, the shift away from hardware philanthropy (i.e., supporting big physical projects) and toward so-called software philanthropy (i.e., supporting people and programs). The Trust worked nonstop for three weeks and presented their plan at the next stewards’ meeting. Cheung and his team articulated a shift to investment in human capital through the initiation of rigorously researched, proactive projects in specific target areas. These target areas were selected, at the macrolevel, to address the big issues in Hong Kong society. Each project would be designed, at the microlevel, to pursue a specific tactical focus in its target area.

The Trust had always been known for wide-ranging largesse, and the selection of these four “strategic themes” did not undercut that. The themes—Youth; Elderly; Sport; and Arts, Culture, and Heritage—were broad-based enough that all of the Trust’s existing activities could operate under new categorizations; indeed, it was important that the Trust’s transformation did not leave existing partners and projects in the lurch. The bigger change was in how the Trust thought about not just funding, but initiating and developing programs to address Hong Kong’s needs. Cheung and his team laid out their intention to develop theme-specific views (“What are

we trying to do, specifically, on Youth?”) and pursue grant-making activities that served and improved the Trust’s comprehension of and ability to address each of its strategic themes.

“Now, we put up one hypothesis per area,” is how Cheung described the change. The executive director called this hypothesis “a strawman”; other members of his team referred to “house views.” What the Trust proposed to the stewards was that these hypotheses would be developed on key issues within each strategic theme, after both independent research and consultation with stakeholders in each space. The purpose of developing these sector-level strategies was to formulate the Trust’s position and goals with respect to broad social changes—first, for internal clarity and discussion, then for external communication to potential partners.

The stewards were enthusiastic. The Trust got to work.

A key aspect of this new direction was proactive engagement of potential partners. The Trust, previously, was primarily a grant approver: it carefully evaluated proposals brought before it, forming partnerships with organizations whose proposals fit its funding criteria. Under its new mandate, the Trust worked to understand Hong Kong’s pressing needs in detail and seek out partner organizations with whom it might collaborate to address these needs. “The first time we went out to talk to people,” Cheung recalls, “I think some of them were . . . pleasantly surprised.” This proactivity went hand-in-hand with engaging a broader range of partners than the Trust previously had a reputation for pursuing, including smaller NGOs and non–social sector players.

“Proactively identifying and initiating projects that anticipate future community and social needs,”16 as the Trust puts it, eventually got a name: Trust-Initiated Projects, or TIPs. The process of conceiving and creating a TIP was refined and iterated throughout 2015 and 2016. By mid-2016, when CoolThink@JC was underway, a clear set of guiding parameters had emerged. A TIP:

- Had a clear objective, formulated by the Trust, which addressed a specific social issue or service gap (e.g., lack of CT training for youth, and specifically in mainstream schools) and a clear goal within it
- Identified and approached partners (e.g., leading academics in the pedagogy of CT) to create a cross-sectoral collaboration platform to meet this objective
- Developed a testable strawman hypothesis at the outset (e.g., “CT can be widely, effectively taught in Hong Kong primary schools.”)
- Tracked outcomes and impact to assess that hypothesis (see Exhibit 8)
- Engaged, from inception, the possibility of replication, mainstreaming, scaling and/or sustaining the project beyond the Trust’s funding (e.g., CoolThink@JC was a pilot program in CT, the goal of which was to develop a curriculum that could be implemented in all Hong Kong primary school classrooms.)

The emphasis on impact assessment was novel and important. Before these changes, the Trust tracked the output of projects it funded, but seldom asked applicants to project or assess impact. Tracking output worked well for physical, hardware projects: if the Trust funded the construction of a swimming pool, for example, it would monitor the progress and eventual

completion of that project. It would ask, essentially: “Was the pool built? Was it built on budget, and according to specifications?”

Now, however, all the questions were different. Keeping with the same example, a swimming pool, the Trust’s questions would be more detailed. “So, how many more people are swimming in this area, measured in hours per week, since this pool has been opened? What health outcome is this activity projected to have?” The answers to these questions might then be incorporated into a strategic theme—say, if the swimming program were targeted to benefit the elderly. And, crucially, this inquiry and evaluation would take place throughout a project’s life cycle. From planning to wrap-up, a program’s progress would be measured, analyzed, and fed back into its operations, constantly improving it. Tracking what worked (and what didn’t) allowed the Trust and its partners to foster collaborative, data-based, responsive interventions.

In short, the Trust’s new direction was built on longstanding foundations of its identity; it crystallized a new, specific, rigorous set of guiding parameters atop them. Dedication to a prosperous and equitable Hong Kong remained the Trust’s core mission. Its unique position at the nexus of Hong Kong’s public, social, and private sectors was accentuated. The Trust and its management saw the impact this new direction positioned the organization to have—this potential was why many of them worked at the Trust in the first place. They also understood that the new direction was definitionally collaborative, and “be humble” emerged as a guiding approach in this respect. “Be humble” was not just about decorum or politesse: the Trust consistently gave credit to partners in every program because, in order to be effective, the Trust needed to be—and to be perceived as—a fair and positive collaborator. This also suited the Trust’s broader goal to contribute to social sector capacity by strengthening the organizations it partnered with.

The Trust’s status as a central, communicative, and impartial partner was also key to its relationship with Hong Kong’s public sector. Because of its scale and history, the Trust benefited from open lines of both formal and informal communication with Hong Kong’s government, sharing goals and potential plans still in formation. This is clearly demonstrated by the process through which CoolThink@JC was conceived and initiated (see below). The Trust’s team was also aware, however, that its independence was key: it needed to be an autonomous actor. Maintaining this balance—open communication, accessibility and information-sharing, clear independence—was one of the Trust’s most distinctive features.

CoolThink@JC

Inception and Formulation

CoolThink@JC was an archetypal TIP from the start. A social challenge (Hong Kong’s lack of CT education) in one of the Trust’s strategic theme areas (Youth) was crystallized through research into a question (“Can we improve how we teach this in schools?”). Then, a programmatic answer—the curricular pilot—was hypothesized, formulated, and executed in collaboration with partnering experts. Equally important, the Trust engaged the public sector throughout the process, in hopes of eventually effecting broad change in Hong Kong’s education system.
“Computational thinking,” on which CoolThink@JC was focused, is a potentially misleading term. It does not refer to a narrow band of vocational skills in coding or programming. Rather, CT entails a pedagogical approach that emphasizes logical thinking and creative abilities that have wide applications in today’s labor markets. “Coding technique is not what we are after,” explains Daniel Lai, who was the Hong Kong’s Government Chief Information Officer from 2012 to 2015, and became CoolThink@JC’s Programme Director. “What we’re after is how the children look at and address problems, how they tackle abstraction and decomposition, lists and sequencing, conditional logic. Basic, fundamental principles.”

CoolThink@JC originated when the Trust’s management staff were developing the youth strategy—its “house views.” They kept running into coverage of CT education across the globe. They began to explore the ways that some countries’ educational systems were already integrating CT into students’ curriculum. By reviewing these international best practices, the Trust’s management began to identify a theoretical framework for teaching CT in Hong Kong’s schools, with age-appropriate pedagogical tools for elementary school students. They also, critically, engaged a number of teachers’ associations in Hong Kong, conducting focus groups in order to gather information on the teachers’ training requirements and expectations. They even went through a half-day CT training workshop themselves, to get hands-on experience with how the topic could be both challenging and fun.

All of this led the Trust to the conviction that CT-based educational modules ought to be an important part of Hong Kong’s future curricula. Globally, CT education was growing. Leaders such as Estonia and Israel were working to assure that their next generation would be ready to contribute to dynamic, creative tech sectors. The United Kingdom was another front-runner, having instituted compulsory coding education in 2014.

In Hong Kong’s primary schools, on the other hand, CT was just a topic under general studies; in fact, this was true of information technology in general. The Trust’s work revealed possible causes of this. Most obvious was a capacity problem in teaching. Hong Kong did not have enough teachers—especially at the primary school level—who felt comfortable initiating and offering CT curricular elements in their classrooms. This led to one of the first realizations of what a CT pilot in Hong Kong would look like: it would have to include teacher training, to demonstrate that a broad base of primary school teachers—rather than a small, specialized cadre of IT/coding teachers—could be prepared to successfully offer CT curricula.

From here, the Trust began assembling the coalition required. Hong Kong possessed a number of experts who would be needed to institute CT teaching in primary schools—but they had not yet been brought together. Consistent with its new strategy of expanding traditional outreach, the Trust contacted private sector firms that had developed a useful and successful model in the form of well-run, for-profit programs in CT. These short courses were illustrative, but they were focused on narrower skill sets than the Trust was looking for. They were also, of course, predicated on a business model that served fee-paying students, which in practice meant middle- or upper-middle-class families.

The Trust found that, while a number of experts and institutions in Hong Kong were doing rigorous work in CT and its pedagogy, these experts and institutions were by and large not focused on the day-to-day details of implementing their work in classroom settings. This was a critical last-mile gap, and assembling the skills required to close it was central to the program’s formative stages.
Winnie Ying, Executive Manager at the Trust, remembers that it took “about six months to identify who will be the program resources, to position different experts so that everyone was doing their best job.” One of the first key partners was Professor Kong Siu-cheung at The Education University of Hong Kong (EdUHK). Professor Kong was a leading academic in mathematical and CT pedagogy; he had deep theoretical expertise and some practical experience teaching teachers. But—by his own admission—he had little background in developing curricula for elementary school kids, or otherwise working directly with students. Ying, acting on the Trust’s mandate of collaborative creation, went back and forth with Professor Kong over many weeks, discussing what he felt he could and could not contribute to the program.

These conversations led the Trust to Professor Matthew Li at the City University of Hong Kong (CityU). CityU established an Apps Lab in 2013, offering multilevel coding training to youngsters. This firsthand experience was complementary with Professor Kong’s: Professor Li and his colleagues had been going into schools doing one-off workshops for some time. Their experience in working with individual teachers, students, and classrooms would prove invaluable once it was time to implement the curriculum.

Finally, in August 2015, staff at the Trust contacted Professor Harold Abelson at the Massachusetts Institute of Technology (MIT). Professor Abelson was a recognized leader in this space; App Inventor, a development tool that he’d led the creation of, allowed anyone to make an app through an easy-to-use, intuitive interface. Professor Abelson was, when the Trust contacted him, organizing a master trainer program at MIT that was open to global applications; its purpose was to encourage people from different countries to train educators in the use of App Inventor. The Trust organized a group of representatives to attend, and thus the core team behind CoolThink@JC was formed.

Engaging the EDB

In parallel with their outreach to potential academic partners, Ying and other staff at the Trust were engaging Hong Kong’s Education Bureau (EDB). It was “essential, before even formulating the program,” notes Ying, that the Trust understand what the EDB’s plans in CT were. Without the EDB’s enthusiastic embrace of the Trust’s pilot program, that’s all that it ever would be: a pilot program in a comparatively small number of schools. And what the Trust envisioned was a dynamic addition to the curriculum of all Hong Kong’s primary school students.

The progression of the Trust’s conversations with the EDB also demonstrated how its big transition—from hardware to software, from large physical projects to programs such as CoolThink@JC—was evolving its relationship with the government. The Trust, in its new strategic role, was able to add value as far more than a source of funding. It could contribute the initiative and analytic work to develop pilots such as CoolThink@JC. It had the flexibility to execute where the government might be constrained. Senior government officials appreciated the fact that the Trust could explore promising new possibilities that they themselves lacked the resources or freedom to test out. This meant that the Trust’s interactions with government wove between different levels of communication, allowing each side to air ideas and feedback that could be formally expanded upon where synergies were discovered.
Introducing CT curriculum into Hong Kong’s primary schools was one such case. Certainly, the EDB was interested. 2014’s Government Digital 21 Strategy, released by the Office of the Government Chief Information Officer, advocated “programming in every child’s education.” So it was not surprising that the government’s representatives reacted positively when the Trust’s management brought up the possibility of a pilot program in CT education.

The Trust built on this interest. In subsequent discussions, it sought to understand what the EDB would require in order to make CT a part of Hong Kong’s elementary school curriculum. What evidence would confirm that this promising possibility might become a reality in all of Hong Kong’s schools? The Trust’s flexibility, financial resources, and convening ability meant it was in a good position to try out pilot projects even if they might not succeed, while its ongoing dialogue with the EDB assured that CoolThink@JC’s test phase would gather the information necessary to maximize the program’s chances of eventual replication. For the EDB itself, developing such a pilot would have been too costly and required too many hours spent engaging multiple constituencies and clearances, not the least of which was the Hong Kong’s Legislative Council’s competing priorities. The Trust’s process was robust, but somewhat simpler: identify a need, conduct research, formulate a hypothesis and a program to test it, gather partners to implement that program, and put the whole package to the stewards for clearance.

Preparation to Pilot

The Trust now had a roadmap for the launch of CoolThink@JC. At an in-depth meeting with the EDB in October 2015, after months of preparation, the Trust presented a concrete plan for the scale and scope of the pilot, as well as the work it had done securing partnerships with EdUHK, CityU, MIT, and teachers’ associations. After further iteration, the Trust then gave a final, comprehensive presentation in December. This meeting, with the EDB’s head of curriculum development, was intended to test whether the plan that the Trust had prepared was sufficient. Did it cover everything that the EDB would need? If the pilot were successful as formulated, would that be enough for the EDB to move toward integrating this curriculum into primary schools, beyond the small subset of pilot schools? Was this compatible with the EDB’s plans?

This dialogue advanced at constructive speed. The Trust was able to process and implement the EDB’s feedback, having had past experience doing so. It was at this stage that the EDB made it clear that buy-in from teachers was imperative; this, in turn, informed the Trust’s choice of partners and its decision to attend Professor Abelson’s master teacher training seminar in fall 2015.

Formulating the Program

Now, it was time to develop a program that would deliver. CoolThink@JC’s raison d’être was to create an actionable CT curriculum that Hong Kong’s primary school teachers could

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successfully implement in their classes; this came with the ancillary deliverable of a preparatory teacher-training module.

The Trust, based on its research, framed an outline for the curriculum. Much of the Trust’s research was rooted in the work done by its partners at EdUHK and MIT: Professors Kong and Abelson, respectively. Unsurprisingly, therefore, the process of fine-tuning and agreeing on a substantive framework for the curriculum’s content went smoothly. (CityU’s active role would come later, in-classroom, working with teachers and, through teachers and parents, with students).

This framework served as the basis for the student’s work in the course, and from there, the Trust and its academic partners went to work building the actual curricular modules. It was a spirited, respectful process: a dialogue between leaders in the field. The Trust’s experience was again useful in incorporating both EdUHK and MIT’s strongly held and well-formulated convictions.

It was also important to get the governance right. As CoolThink@JC moved toward implementation, everyone understood that clear processes and constructive onboarding for all partners would be critical—not just for the major academic institutions, but also for the teachers’ associations and the EDB itself. Defining goals, roles, and responsibilities at the start would establish a crucial reference for when hard decisions (inevitably) came up. This meant careful thought into the structure and composition of the program’s governance structure. Cheung, recollecting the program, observes that everyone knew the project would be complex, so clearly defined governance was important from the start—as a way to prepare for inevitable challenges.

The operational nucleus of the program was housed in the Central Coordination team. This was led by Daniel Lai, who had key experience as the Hong Kong government’s Chief Information Officer and who had, prior to that, held senior information technology managerial positions at the Club over a two-decade relationship. The Central Coordination team also included other Trust staff who ran the program’s operations and organized its various activities.

The Steering Committee, meanwhile, served as CoolThink@JC’s board of directors. This committee included Trust leadership, but was principally about engaging the program’s diverse external stakeholders. Marjorie Yang, a leading businesswoman and philanthropist, was a logical chairperson: her relationship with the Trust and diverse connections had already contributed to the program by strengthening its contacts with both Professor Abelson at MIT and Daniel Lai. The EDB’s Permanent Secretary—its most senior civil servant—was another key member, as were representatives of Hong Kong’s primary school teachers and private business community. The Steering Committee met, at first, every four months. It provided a “forcing function,” in the words of Trust staff. At its meetings, substantive high-level dialogue took place regarding the overall structure, goals, and future of the program.

Finally, there was the Expert Group. The Expert Group was the keystone that rested between the Steering Committee’s board-level strategic concerns and the Central Coordination committee’s day-to-day implementations: it “executed the initiative through six subcommittees,” where most of the conversations between the Trust, EdUHK, MIT, and CityU regarding content-based curriculum development and implementation took place. It was chaired

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18 The Hong Kong Jockey Club. (https://www.coolthink.hk/en/about-us/who-we-are/)
19 Ibid.
by Professor Kong, rather than anyone from the Trust, to solidify the assurance that the program’s academic partners drove the agenda. The Expert Group met more frequently than the Steering Committee, about every two months, and also included representatives from the EDB and teachers’ associations.

With all of these pieces organized and ready, Cheung submitted the plan for the CoolThink@JC pilot program to the Board of Stewards in February 2016—and received its approval. In April of that year, Daniel Lai was brought on as Programme Director; around the same time, Marjorie Yang was made Chairperson of the CoolThink@JC Steering Committee.

The Challenge: Teacher Feedback

As the Trust’s experienced managers had anticipated, all of this planning was soon put to use. Throughout CoolThink@JC’s formulation and implementation, the importance of a continuous feedback loop, using quantified metrics and feedback from teachers (see Exhibit 8), was well understood. In early 2017, the value of this feedback loop was made clear when teacher feedback revealed issues with the curriculum.

The first glimmers had come earlier, in November 2016. As noted above, the Trust had gathered a team of partners, EDB representatives, and its own staff to attend Professor Abelson’s teacher development course at MIT that fall in Cambridge, Massachusetts. The EDB representatives who attended were themselves experienced teachers with technical backgrounds—they were there as part of the EDB’s conviction, shared by the Trust, that no implementation would be possible without buy-in from Hong Kong’s teachers. The course went smoothly and no formal problems were aired; it was a good early step in a growing partnership. But Lai and other program staff, in debriefs with the EDB representatives, received a few “casual comments” to the effect that the curriculum, as formulated at this development course, might be a little ambitious for Hong Kong’s primary school classrooms.

These casual comments were given substance weeks later, in December, when CoolThink@JC began getting feedback from teachers. The program first heard from two pilot schools that had been implementing the curriculum in classrooms; in January, 10 more schools’ first reports came in; by March, all 32 pilot schools had delivered their initial reviews. It took a few weeks to clarify and analyze the feedback, but by May it was clear: the curriculum needed substantive revision.

“Basically,” summarizes Lai, “the curriculum was a bit much for primary 4,” referring to the classes of 9- and 10-year-olds that CoolThink@JC was intended to serve. Teachers found themselves running behind: the pilot’s lesson plans utilized more of the official 35-minute class period than was practical in an actual school setting, after teachers factored in realities such as the few minutes it took for their charges to arrive and settle in to work. About half of the teachers in the pilot found that they did not have time to finish the curriculum they had been given. The Trust and its partners had anticipated some difficulties, of course. But not at that high a percentage.

Everyone agreed that responding to this feedback was a first-order priority. The teachers’ buy-in was, in a sense, the whole point of the pilot: without it, the EDB would never roll the curriculum out across all Hong Kong’s schools.

But disagreements emerged as the Trust and its partners began to work through how to change the curriculum. “The challenge for the curriculum development team,” Lai recalls, “was
to rejigger content without losing fundamental principles.” The varied academic partners had, predictably, “strong views of their understanding of certain issues.” And these strong views were not, in this case, in agreement. EdUHK and MIT disagreed, in good faith but clearly, on a number of important questions.

What exactly did it mean that teachers found a given module “too difficult”? How much data should be required to drive a certain, specific change to lesson-plan design? How much should the curriculum compromise comprehensivity in favor of accessibility?

EdUHK and MIT answered these questions differently. Professor Kong and his EdUHK colleagues were comfortable, for example, changing the curriculum to give semiconstructed elements of applications to students, instead of tasking the students to create these elements from scratch. If these particular elements weren’t essential to the CT principle being taught, Kong et al. reasoned, there was no harm in providing a shortcut that trimmed time for the teachers. The MIT pedagogists, on the other hand, were cautious of tradeoffs like this—they understood the need to simplify the curriculum, but were concerned about doing so at the cost of learning experiences and discovery that, to their minds, were important to the module.

While these disagreements remained collegial, they were exacerbated by communication difficulties. The Hong Kong–based partners felt that their proximity to the teachers and students helped them understand the difficulties that teachers were expressing; they were concerned that MIT, at a greater remove, might be being inflexible. MIT, on the other hand, had the inverse concern: its staff were anxious to make sure that App Inventor, a carefully wrought teaching tool, was being used to its best effect. They were worried that their distance might mean that their arguments and specifications for its use were not being clearly heard and considered.

Everyone’s position made sense; there was no one answer. Meanwhile, disagreement was exacerbated by cultural disconnects in communication style. The partners came away from single, shared conversations with different understandings.

The Trust, by design, was right there in the middle. It had known to expect this. “This kind of disagreement happens in all TIPs,” recalls Ying. “In every TIP, we’re working on a new challenge. It’s completely new to everyone. One of the things that we have to do, therefore, is make alignments between different partners.” Lai echoes Ying’s assertion, observing that the Trust’s mandate is to orchestrate and facilitate, “not to direct or control,” even—or perhaps especially—when partners from different disciplines approach issues differently.

But, in this case, time was of the essence. When these issues crystallized, in May, there were only weeks left before teachers would need the updated curricula to prepare for school in August. And it was curricula, plural. As Lai puts it, there was a “ripple effect”: this feedback pertained to curriculum Level 1 of three, and any changes to Level 1 would impact Levels 2 and 3. So the CoolThink@JC team was figuring out—or, rather, not figuring out—how to revise three curricula under a looming deadline.

A Delicate Balance

This was the challenge that Leong Cheung considered, sitting there in his office on a muggy May morning.
There was no question: the Trust’s philosophy of collaborative partnership, as well as the pilot program’s practical success, demanded satisfaction for all who had contributed to its formulation and execution. The management challenge remained: how to assure this. EdUHK and MIT needed to reach an understanding of how to implement agreed-upon changes—so that teachers could be trained in the use of a rigorous and workable curriculum, and so that the EDB could canvass their views, download their approval, and begin to entertain the possibility of rolling the curriculum out in all of Hong Kong’s primary schools. All partners were needed to contribute the best of their respective and complementary experiences.

The challenge was familiar—but that did not mean it was simple.

The Trust had a central position, as the program’s convening partner and funder. It was expected, and correct, for it to exert leadership at times such as this. But how to assure that leadership remained open and collaborative, while still exerting enough guidance to keep CoolThink@JC on track and on target?

These questions pressed on Cheung and the CoolThink@JC team in this moment; they could easily be asked of the Trust’s role in Hong Kong’s social sector more broadly. The Hong Kong Jockey Club Charities Trust occupied a unique and, in many ways, enviable place. It had a central position in the territory’s philanthropic landscape. It had the resources and reputation to bring partners together to work toward a brighter future for all Hong Kongers. How could it best use these assets to initiate, facilitate, and convene ambitious projects? To incorporate other organizations as equals, respecting and leveraging their expertise and experience? Hong Kong was changing, and the Trust was changing with it. How could it best manage the challenges and opportunities of its reinvented identity and unique status to serve “the betterment of Hong Kong society”? 
Exhibit 1
The Hong Kong Jockey Club: Purpose and Core Values

Purpose
As a world-class racing club, we act continuously for the betterment of our society.

Core Values
World-class Leadership
Uncompromising Integrity
Continuous Development
Serving the Community

Exhibit 2
Organizational Structure

Exhibit 3
Board of Stewards:
Description and Individual Bio

The Board of Stewards, headed by its Chairman, is elected from among the Club's Voting Members, normally for terms of three years. The stewards usually have strong business and public service backgrounds and are themselves racing enthusiasts. Working on a strictly voluntary basis, the board develops and oversees the strategy and direction of the Club.


Dr. Simon Sik On Ip, CBE, Hon DEd, Hon LLD, JP
Chairman of The Hong Kong Jockey Club

Dr. Simon Ip is a solicitor and Notary Public, having been admitted as a solicitor in England & Wales in 1971 and in Hong Kong in 1972. He practiced with Johnson, Stokes & Master from 1972 until his retirement from legal practice in 2004. He was Chairman & Senior Partner of Johnson Stokes & Master (now Mayer Brown JSM) from 1996 until 2004.

Dr. Ip is an Honorary Court Member of the Hong Kong University of Science and Technology, an Honorary Lecturer in the Department of Professional Legal Education of the University of Hong Kong, an Honorary Research Fellow of the Faculty of Law of Tsinghua University and Co-Chairman of the International Advisory Board of the School of Law of the City University of Hong Kong. He is also an Independent Non-Executive Director of Hang Lung Group Ltd.

From 1991 to 1995, Dr. Ip was a Legislative Councillor representing the Legal functional constituency, the only solicitor to have done so since elections to the Legislative Council were introduced. He also served as President of the Law Society of Hong Kong from 1987 to 1989, and as Founding Chairman of the Council of the Hong Kong Institute of Education from 1994 to 2003. He was made an Honorary Doctor of Education by the Hong Kong Institute of Education in 2003, an Honorary Doctor of Laws by the City University of Hong Kong in 2009 and an Honorary Doctor of Laws by the Hong Kong University of Science & Technology in 2011.

A keen follower of horse racing, Dr. Ip has been a Member of The Hong Kong Jockey Club since 1973 and a Voting Member since 1992. He was elected to the Board of Stewards in 1999. He has been involved in the ownership of some 28 Hong Kong racehorses since 1990, either in his own right or through the Legal Form, Master or Equity Syndicates. Three of these horses are currently in training: Glacier Blue, Gallant Rock (Equity Syndicate) and the yet-to-be-raced Master Mind (Master Syndicate).

Dr. Ip has also been a long-time supporter of equestrian sport and is current President of the Hong Kong Equestrian Federation.

Exhibit 4
“What is a TIP (Trust Initiated Project)?”
Winnie Ying’s Seven Questions

1) Is it a social issue that needs to be addressed urgently?
2) Is it something the Trust should get involved in? Can the Trust make a difference?
3) Do we have the buy-in of field players and key stakeholders?
4) Do we have a specific project idea/solution that may help to address the issue?
5) Do we have capable partners in the field whom we can invite to work together?
6) Is there any potential risk? If yes, is it manageable?
7) What do we want to achieve with this project? Is there potential for this project to create intellectual capital and a sustainable impact and be mainstreamed?

Source: The Hong Kong Jockey Club (internal interviews)
Exhibit 5  
Trust Initiated Projects:  
Examples  

**CLAP for Youth@JC**  
Launched in 2015, CLAP for Youth@JC is a Trust Initiated Project which aims to create a new paradigm for youths to discover career interests and pursue life goals through an expanded notion of work. The first such comprehensive programme in Hong Kong, over its five-year duration it will develop an evidence-based cross-sectoral collaboration model to help students and non-engaged youth find their own paths to a fulfilling life.

**C-for-Chinese@JC**  
C-for-Chinese@JC is designed to strengthen the abilities of non-Chinese speaking local kindergarten students learning Chinese as a second language, with the aim of helping them make a better transition to primary education and integrate more effectively into society. To achieve this, C-for-Chinese@JC aims to establish a holistic learning model encompassing home, school and community. A notable feature is the empowerment of ethnic minority youth as multicultural teaching assistants.

**Jockey Club Age-friendly City**  
Launched in collaboration with Hong Kong’s four gerontology research institutes, the aim of the Jockey Club Age-friendly City Project is to build momentum for an age-friendly Hong Kong through bottom-up district based initiatives.

**Jockey Club Community eHealth Care**  
Integrating the latest health management technology with community care and professional support, the Jockey Club Community eHealth Care Project, a Trust Initiated Project, aims to promote preventive healthcare among the elderly by empowering them to conduct their own health management. The project will help 80 elderly centres detect and address the health and social needs of the elderly.

Exhibit 6
The Hong Kong Jockey Club Charities Trust: Unique Strengths

Innovator
- The Club has the ability to fund innovative programs and back new service models/approaches
- The Club has the freedom to take a long-term view and invest more in prevention and participation

Convener
- The Club’s neutrality and its size enable it to bring multiple, diverse parties together to align on a vision to address a specific social issue

Society Educator
- The Club has a strong brand and can play a powerful role in awareness raising and education across Hong Kong. This will be important in order to shift attitudes and behaviors

Strategic Funder
- The Club has the resources and ability to take a strategic view of the sector and assess what is needed
- The Club is seen as a trend-setter in the social sector

Source: The Hong Kong Jockey Club Charities Trust internal presentation, December 2015
Exhibit 7
CoolThink@JC Timeline

May–June 2015
The Hong Kong Jockey Club Charities Trust begins research and outreach to various educators in Hong Kong related to the topic of Computational Thinking (CT).

June 2015
The Trust begins discussions with Professor Kong Siu-cheung at The Education University of Hong Kong (EdUHK)

August 2015
Professor Kong shares initial thoughts on framework for a curriculum in CT, taught through coding and other educational tools.

September 2015
The Trust begins discussions with Professor Harold Abelson at the Massachusetts Institute of Technology (MIT)

October 2015
The Trust organizes focus group with schools—teachers and principals—on the topic of how to approach teaching CT in the classroom.

October–November 2015
Based on internal research, the Trust identifies Karen Brennan’s CT as a potential basis for their own program-evaluation plan; in separate conversations, the EdUHK and MIT teams agree with this direction. Additionally, the Trust engages an external consultant for a three-week study to design the pilot programs monitoring and evaluation.

For further background on this framework, please see:

November 2015
Professors Kong and Abelson are formally introduced and, along with respective colleagues at EdUHK and MIT, begin drafting a plan for the project.

November 2015—January 2016
EdUHK, MIT, and CityU—the Trust’s third academic partner—collaboratively develop a combined proposal for the overall project, to be led and consolidated by EdUHK. The Trust works closely with the teams throughout this process.
February 2016
The proposal for CoolThink@JC is submitted to the Hong Kong Jockey Club Board of Stewards for approval.

March 2016
- The Steering Committee is formed (invitations sent and accepted).
- The first project kickoff workshop is held in Hong Kong with all partners (and teacher and principal representatives from local primary schools) to confirm set-up and membership of Expert Group and subcommittees, as well as to align vision, prepare and review work plans, and define dependencies for the project.

April 2016
The Trust invites all local schools to a briefing session of the CoolThink@JC initiative. One hundred fifty schools, which accounted for 28 percent of local schools in Hong Kong, applied to be one of the 32 Network Schools.

May 2016
- The steering committee holds the first meeting and endorses the selected list of 12 Cohort One Network Schools.
- The overseas kickoff meeting takes places at MIT, where the whole team (from MIT, EdUHK, CityU, and the Central Coordination team) meet face-to-face for the first time to work out matters related to:
  1) Work flow of producing sets of learning and teaching material and assessment rubric
  2) Web portal operation framework between the HK web portal and MIT App Inventor website
  3) Teacher development design
  4) Research agenda

August 2016
The Steering Committee holds the second meeting and endorses the selected list of 20 Cohort Two Network Schools as well as 2 Resource Schools.

October 2016
The CoolThink@JC team shares the project vision and plans with the school-sponsoring bodies of the participating Network Schools at a networking lunch.

November 2016
CoolThink@JC officially launches.

December 2016
CoolThink@JC’s learning management system goes live, providing integration with the MIT App Inventor 2 system.
March 2017
A visit takes place by the International Professional Learning Communities delegation from the UK's Welsh Government to learn more about CoolThink@JC.

March–October 2017
The CoolThink@JC Competition 2017 targets all Primary Four to Primary Six students with the aim to enhance students' awareness and interests on CT through coding and problem-solving skills, and to enable students to apply their knowledge and skills on CT to solve problems, and enhance creativity, innovation, and coding techniques, as well as encourage collaboration. Over 100 submissions are received.

June 2017
A visit takes place by the Austrian Consulate’s Federal Minister for Families and Youth to learn more about CoolThink@JC.

July 2017
- CoolThink@JC International Conference on Computational Thinking Education 2017 takes place.
- Teachers from Cohort One Network Schools complete their professional development courses and have delivered CoolThink@JC Level 1 materials in their upper primary grades.

September 2017
- Research center SRI releases its evaluation baseline report, which is the first report of a three-part independent evaluation series for CoolThink@JC.

Source: The Hong Kong Jockey Club (internal interviews)
## Exhibit 8
### CoolThink@JC Evaluation and Assessment

<table>
<thead>
<tr>
<th>Evaluation goal</th>
<th>Evaluation instrument</th>
<th>Sample</th>
<th>Timing</th>
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</thead>
<tbody>
<tr>
<td>Understand the CoolThink@JC pilot’s impact on students’ computational thinking</td>
<td>CT Concepts</td>
<td>All students in Primary 4-6 at 30 pilot and 24 control schools</td>
<td>Feb/March 2017;</td>
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<tr>
<td></td>
<td>CT Perspectives</td>
<td></td>
<td>June/July 2017, 2018, 2019</td>
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<tr>
<td></td>
<td>CT Practices</td>
<td></td>
<td>Sept/Oct 2017;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>June/July 2018, 2019</td>
</tr>
<tr>
<td>Understand how the CoolThink@JC pilot was implemented in classrooms</td>
<td>Classroom Observations</td>
<td>Within each of 4 select pilot schools:</td>
<td>Fall 2017</td>
</tr>
<tr>
<td></td>
<td>Student Focus Groups</td>
<td>- 3 teachers</td>
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<td></td>
<td>Teacher Interviews</td>
<td>- 1 interview/teacher</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- 1 classroom observation/teacher</td>
<td></td>
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<tr>
<td></td>
<td>School Leader Interviews</td>
<td>- 2 student focus groups</td>
<td>Spring 2018, 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 1 school leader interview</td>
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<tr>
<td></td>
<td>Educator Survey</td>
<td>All pilot teachers</td>
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</tr>
</tbody>
</table>

Source: The Hong Kong Jockey Club Charities Trust (internal presentation)
Exhibit 9
CoolThink@JC Key Partners

CoolThink@JC is created and funded by The Hong Kong Jockey Club Charities Trust, and co-created by The Education University of Hong Kong, Massachusetts Institute of Technology, and City University of Hong Kong.

Source: The Hong Kong Jockey Club Charities Trust, internal presentation (June 2018)
Exhibit 10
CoolThink@JC Governance Structure

Steering Committee:
Oversees and directs the initiative to ensure it delivers its target benefits

- Convenor: Community leader
- Members:
  - Hong Kong Jockey Club (HKJC)
  - Education Bureau (EDB) official
  - Senior academics
  - School representative
  - Business executive

Expert Group:
Executes the initiative through six subcommittees

- Convenor: The Education University of Hong Kong (EdUHK)
- Members:
  - City University of Hong Kong (CityU)
  - MIT
  - EDB
  - HKJC
- Association of I.T. Leaders in Education
- Hong Kong Association of Computer Education

Subcommittees:

- Curriculum design and development
  - Teacher development
  - Conferences and seminars
  - Convenor: EdUHK

- In-school co-teaching support
  - Parents education
  - Convenor: CityU

- Independent evaluation
  - Research and learning
  - Convenor: SRI International

- Learning platform
  - Competitions
  - Convenor: HKJC

Central Coordination Team:
Coordinates across partners

- Convenor: Programme Director
- Members:
  - HKJC staff

Source: The Hong Kong Jockey Club Charities Trust, internal presentation (June 2018)
Exhibit 11
CoolThink@JC, the Education Bureau, and Sustainability

Project impact and sustainability

Expected project impact

- **Pilot will directly impact 32 schools, 16,650 students, over 6,000 teachers, and 200 young people**

- **Over 16,560 students and 106 teachers and social workers from 32 schools will directly benefit from the delivery of the new curriculum, teacher training and co-teaching support**

- **Over 70 seminars, conferences, workshops and lectures will be conducted by resource schools and the Expert Group, expecting to benefit over 6,000 teachers and practitioners**

- **200 university students and graduates, and a small number of disadvantaged youth, will be trained as teaching assistants and receive valuable “service learning” experience**

Mainstreaming by EDB in primary school curriculum for long term sustainability

- EDB has been engaged throughout project development phase and assured that this pilot programme is well-timed to fit with its plan for ICT curriculum development roadmap

- Mutual understanding with EDB that they will continue to play “an active role in advising HKJC and the Steering Committee” throughout programme implementation

- **Rigorous, evidence-based evaluation research will be created through this pilot to provide justification for mainstreaming, and a well-defined set of curriculum and teaching materials will facilitate roll out for EDB**

Thought leadership contribution locally and internationally

- This project is expected to be a significant contribution to the international education community as the first-of-its-kind systematic evidence-based study of computational thinking in education

- Can serve to reinforce the Trust’s position as a thought leader in anticipating and solving metropolitan social issues in the 21st Century, in innovation and technology
CoolThink@JC Aligns with Government’s Policy Direction

“At the primary level, coding is recommended to be introduced to develop students’ computational thinking”

“EDB will strengthen collaboration with… Computational Thinking and Coding Education of Hong Kong Jockey Club Charities Trust”

(December 2016)

Source: The Hong Kong Jockey Club Charities Trust, internal presentation
Exhibit 12
Hong Kong Media Coverage of Computational Thinking and Coding Education

Source: The Hong Kong Jockey Club Charities Trust, internal presentation

South China Morning Post, 11 July 2014 [excerpt]

Want your bilingual kids to get ahead? Teach them a third language: computer code

Whether or not they dazzle in final exams, students are expected to be numerate and literate, preferably at least in two languages (English and Chinese for most youngsters here). They may soon have to add a third language if they are to get ahead in the twenty-first century: code.

Computer programming, or machine language, code defines much of modern society. It drives all those apps which many rely on everyday to communicate, do business and navigate the world, and policy makers in developed countries have been working on ways to ensure that youngsters speak code.
In Hong Kong, some efforts have begun to instil code literacy. Ray Cheung Chak-chun, an assistant professor at the City University Apps Lab, has been running a series of workshops called "We Can Code", to teach secondary school students the ins and outs of creating mobile apps. At the same time, British entrepreneur David Greenwood started Code Club HK, a volunteer-run network to promote coding among children aged from nine to 11 at after-school activities.

That is far from adequate if Hong Kong is to realise its dreams of being a tech hub. "I won't say Hong Kong is behind the rest of the world. But to become a leader, you need to do more than enough," says Yat Siu, founder and CEO of web-technology company Outblaze.

"Whether you're young or not, code is what the world is made of these days. Everything you do, every application you use ... almost all are done with some form of coding. Code is not only mathematics and logic, but it's also a structured language on which things are built," he says. "So the sooner children know how to code, the sooner they will understand how the world works."

What Yat wants to do is to enable children to become creators - give them the basic blocks that they can build on, much like how they play with Lego bricks. When youngsters code they are also picking up logical thinking skills. By constantly coming up with new ideas and translating them into a language readable by machine, he says, it helps us grasp abstract concepts more easily.

"We're focusing on the nine to 11 primary school age group to begin with, as children are more inquisitive in their earlier years. If we get children engaged early enough they can explore the incredible possibilities computer science can offer. If the Hong Kong education system starts lagging in its teaching of computer science, our children will find it hard to compete in a labour market that is becoming ever more globalised," he says.

What smart cities are seeking is to cultivate its ranks of tech-savvy people who can think computationally—who can envisage new, useful ways of applying programming tools. It certainly calls for multilevel imaginative thinking to conceive of ways, say, of using data from supermarket sales together with weather patterns to decide on what products to stock on the shelves. An understanding of how code works would certainly reduce miscommunications between businesses and software vendors, a problem that Cheung often encounters.

Some governments are already introducing education reforms to address such pressing needs. The British education department announced in February that coding lessons would be introduced in every classroom from September, setting aside £500,000 (HK$6.6 million) to provide teachers with special training for the scheme.

"Hong Kong needs its own reforms too. Schools here are spending too much time teaching irrelevant stuff, such as the use of Microsoft Word and Excel", which many youngsters have picked up in primary school, They need to start teaching students how to create their own things by using coding," Cheung says.

*Hong Kong Economic Times, 7 May 2014* [excerpt]

**兒童寫程式 增創意學解難**

**英美興起港漸流行 中產家長熱捧**

讓兒童寫程式的風氣正全球興起。美國總統奧巴馬去年呼籲讓該國小孩寫程式，英國政府更快人一步，已將電腦程式納入5歲學童課程，在9月新學年實施。

在香港，有前網絡遊戲公司CEO亦看準趨勢，創辦教育中心教學童編寫程式，1小時收費逾300元，仍有不少中產家長趨之若鶩。說到編寫程式，很多人即時聯想到一大堆看不懂的符號，但教兒童寫程式，重點不
在艱澀難懂的程式語言，而是透過製作可愛的動畫、遊戲，培養所有程式語言背後需要的邏輯思維、解難訓練。

教學中心湧現 家長態度改變

這股風氣在香港有萌芽跡象。過去1年香港至少有兩家具規模的兒童程式編寫教學中心出現，其中一間是Koding Kingdom。創辦人禤文浩（John）曾任NASDAQ上市網絡遊戲公司中國區CEO，去年夏天投資7位數字創立專教兒童寫程式的教育中心，提供收費課程予4至15歲的學生，同時還成立非牟利機構Let’s Code (HK)到學校及社區組織合作推廣。

「電腦語言的概念很生活化，如寫程式要將特定情景轉化成電腦可理解的條件（conditioning），小朋友日常生活經常有這樣的經驗，想上洗手間要先跟媽媽說，得到批准才能去。」他說。起初不少父母對這個概念反感。

教學中心湧現 家長態度改變

近數月，禤文浩卻看到不少父母對孩子學寫程式的態度一百八十度改變：近月開始有家長主動接觸他，有中產父母更自組課堂，請禤文浩在住宅會所開班，他相信與歐美的變化有關。

去年，英國政府正式公布新課程，今年9月的新學年起，以Computing（電腦運算）取代原有的ICT（資訊及通訊科技）科目，學童從Key Stage 1，即5至7歲開始，必須學寫簡單的電腦程式。

美國總統奧巴馬亦公開呼籲學生學寫程式。他去年12月在名為「Hour of Code」的全國學生寫程式推廣活動宣傳，叫學生「不要只買電子遊戲，製作一隻；不要只下載最新的App，幫忙設計一個；不要只玩電話，為它寫程式！」此活動有美國3萬多間學校參加，包羅幼稚園到高中學校，Facebook創辦人Mark Zuckerberg、微軟創辦人Bill Gates等亦在影片教材中現身解說基本程式概念，獲不少媒體關注。

學童全程投入 不願放下電腦

香港數碼港早前亦與禤文浩合作舉辦Let’s Code Day。記者數次出席教兒童寫程式的活動，家長普遍坦言看不懂課程內容，學生卻十分投入，有學生吃飯時間也不願放下電腦，老師三催四請才去吃飯。Koding Kingdom發展漸入佳境，至今有超過100名學生。課程以英文教授，雖然每小時收費逾300元，學費不便宜，仍不乏中產家長支持（見另文——「過度活躍童坐唔定變坐定定」）。

教學中心湧現 家長態度改變

教小朋友寫程式要克服課程和師資問題。他邀請港大電腦科學系教授及講師開發教材及設計課程，更到中大、港大招聘和培訓大學生當老師。
撰文：
黄雋灝
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