

A School Curriculum Mapping for Advancing Financial Education in Hong Kong

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In the 21st century, financial literacy is an important survival skill. Empowering school children to make sensible financial decision-making has become essential. A financial competency framework (FCF) describes a set of essential financial competence (FC) elements that inform people with the financial knowledge, skills, attitudes, behaviors, and motivations to implement and assess their personal financial literacy, which is a solid means for coordinating financial education (FE) in schools. However, in Hong Kong, FE in schools is scattered across some subjects and insufficiently embeds the relevant FC elements listed in its FCF. Hence, this study first conducted a literature review on the importance of FE in schools and the use of FCF in school FE, and took Hong Kong as an illustrative example for reviewing the use of its FCF in the school curricula through curriculum mapping and suggested ways for advancing FE in schools. It was found that most FC elements are relevantly well mapped with various learning themes or subjects especially for the Self and Society learning theme in kindergarten, General Studies in primary subject, and four secondary subjects, including Life and Society, Technology Education, Life Planning Education and Career Guidance, and Business, Accounting and Financial Studies. These FC elements can be further coordinated with a school implementation guide, teacher training plan, and assessment tools to advance the FE in Hong Kong.

Keywords: financial literacy; financial competence framework; financial education; school curriculum; curriculum mapping

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Introduction

Financial literacy (FL) refers to how well an individual can understand and use financial knowledge, skills, and attitudes to make effective decisions and engage in effective behaviors in pursuit of financial well-being (Henager & Cude, 2019; Ho & Lee, 2021; Huston, 2010). In short, FL is about an individual's competency for managing money (Remund, 2010) — that is, for understanding the value of money and knowing how to maximize the benefits of money utilization (Kadoya & Khan, 2020), such as through the ability to “process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions” (Lusardi & Mitchell, 2014, p. 6).

An effective financial education (FE) can equip people with the skills to make good use of available financial services and to better assess the financial risks they confront; that is critical for maintaining the public trust and confidence in the financial system. The Organisation for Economic Co-operation and Development (OECD) (2012a, 2012b) recommended to introduce FE in schools by setting tailor-made and quantifiable goals of FL in the school curriculum through formal and informal learning with a reference to a financial competency framework (FCF). A FCF presupposes the educational viability and holistically encompassing conceptual framework for guiding the diagnosis and development of FE from a national perspective (Leumann et al., 2016), and it facilitates curriculum mapping exercise for identifying potential gaps in the existing provision of FE at the national level (OECD, 2015).

To improve the FE in Hong Kong (HK), the Investor and Financial Education Council (IFEC) was established with the support from four financial regulators, including the Hong Kong Monetary Authority, the Insurance Authority, the Mandatory Provident Fund Schemes Authority, and the Securities and Futures Commission, plus the Education Bureau and the financial services industry. The IFEC constructed and updated the Hong Kong Financial Competency Framework (HKFCF) that describes essential elements to support citizens' financial behaviors, knowledge, skills, attitudes, and motivations in 2015 and 2019 respectively (Investor Education Centre, 2015; IFEC, 2019). To what extent can those essential financial competence (FC) elements listed in the HKFCF be embedded in the school curricula for the sake of school children' benefits in HK is the key issue. This study aimed to use HK as a study case, mapping and reviewing its existing FE in the school curricula with the HKFCF to identify gaps and ways for advancing the FE in HK schools.

Literature Review

Financial Literacy

The working definition of FL in the OECD's Programme for International Student Assessment (PISA) is:

Financial literacy is knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life. (OECD, 2012b, p. 13)

In all cases, a comprehensive definition of FL should reflect the idea that FL is more than just knowledge and information (Jump\$tart Coalition for Personal Financial Literacy, 2017). The outcome of financial well-being is broadly defined as long-term financial security and the avoidance of suboptimal financial status (Kasman et al., 2018), as well as having positive creditworthiness for maintaining financial security (Cull & Whitton, 2011).

Importance of FE in Schools

The importance of FL in financial behavior has been demonstrated in previous studies (Hastings & Mitchell, 2011; Lusardi & Mitchell, 2007; Lusardi & Tufano, 2009; van Rooij et al., 2007). In particular, individuals with greater FL are more likely to perform relatively better than their peers in terms of budgeting, saving money, and controlling expenditures (Borden et al., 2008; Moore, 2003; Perry & Morris, 2006); to do better at handling mortgages and other debt (Gerardi et al., 2010; Lusardi, 2019; Lusardi & Tufano, 2009; Moore, 2003); to be more likely to participate in the stock market (Christelis et al., 2010; Yoong, 2010); to choose mutual funds with lower management fees (Hastings & Tejada-Ashton, 2008); to plan for retirement (Lusardi & Mitchell, 2007, 2008); and, ultimately, to accumulate and manage their assets effectively (Hilgert et al., 2003; Stango & Zinman, 2007). Abad-Segura and González-Zamar (2019) carried out a bibliometric analysis on 665 documents to review the period 1990–2018 of worldwide research on the relationship between FE and FL in creative entrepreneurship; the results indicated that there is sustainable growth in this field of study and even becoming a global impact issue in both developed and less developed countries.

FL serves as an essential life skill in modern society and the best place for reaching the youth and learning money matters is through the school (Office of Financial Education, 2002). It is advisable that “financial education should start at school. People should be educated about financial matters as early as possible in their lives” (OECD, 2005, p. 175) till the end of high/secondary school (OECD, 2014). Suiter and Meszaros (2005) stated that getting an early start on FL is critical in increasing for children’s spending prosperity and their decision-making skill. Researchers suggest that children can acquire the building blocks of FL from 3 to 5 years old and begin to form financial habits from 7 years old till the adolescence through experiential learning, interaction with people around, social environment and others (e.g., Consumer Financial Protection Bureau, 2016; Whitebread & Bingham, 2013). More importantly, the improvement on FL at school level will lay down the foundation of FL that can help prevent younger people from making poor financial decisions (Greenspan, 2005; Lusardi, 2019). Moreover, having FE in school can reach those groups who may not be exposed such as women and reduce the costs of acquiring FL at both individual and society levels (Lusardi, 2019). The PISA 2015 results showed that those financially literate students are not only able to make more complex financial decisions, but also more likely to expect to earn a university degree and work in a high-skilled occupation later on (OECD, 2017). High FL students have the opportunity to modify their own financial choices and act as change agents in their households’ financial practices too (Bruhn et al., 2013). Hence, incorporating FE into the school curriculum is essential and popular in many countries (OECD, 2013, 2014).

In fact, in studying the literature on school FE programs for children and youth via a quantitative meta-analysis of 37 quasi-experiments, Kaiser and Menkhoff (2020) found that FE treatments have sizable impacts on financial knowledge (+0.33 SD) and smaller effects on financial behaviors (+0.07 SD) among students. Furthermore, in the systematic literature review on the effectiveness of FL education programs and interventions for children and adolescents, the evidence shows that school-based FE programs can improve children’s and adolescents’ financial knowledge and attitudes (Amagir et al., 2018).

Nature of FCF

On the other hand, for upscaling FE from a national perspective, a FCF is a national strategy and “a nationally coordinated approach” to recognizing the importance of FE by: (a) establishing the meaning and scope of FE at different levels through the cooperation of different stakeholders; (b) forming a roadmap to help policy makers and the general public

to achieve specific and predetermined objectives within a time frame; and (c) providing guidance to be applied by individual programs in order to efficiently and appropriately contribute to the overall strategy (OECD, 2012a, 2013, 2015). Hence, a FCF is a construct for providing useful summaries of a diverse set of financial elements to affect people's financial behavior, knowledge, skills, attitudes, and motivations, in the form of learnable FC for implementation and assessment. Clearly, financial concepts and knowledge (and skills) stated in a FCF are vital components of FL and include broad topic domains such as: (a) spending, budgeting, and saving; (b) investing; (c) credit and debt; (d) taxes; (e) insurance; (f) banking; (g) fraud and identity theft; and (h) employment and income (Jump\$tart Coalition for Personal Financial Literacy, 2017). Financial knowledge and skills can translate into positive financial behaviors through the provision of sufficient opportunities for individuals to act and engage with real-world experiences in outcome-based learning about financial capability.

By referring to a number of FCFs in different countries, such as Australia (Ministerial Council for Education, Early Childhood Development and Youth Affairs, 2011), New Zealand (Ministry of Education, 2014), Japan (The Central Council for Financial Services Information, 2019), the United Kingdom (Bagwell et al., 2014) and the United States (Jump\$tart Coalition for Personal Financial Literacy, 2017), their major goal of FCF was to enable the targeted groups to acquire the relevant financial knowledge, skills, and attitudes to manage their money healthily, both in daily life and in the future, by taking sensible decision-making and actions. The FC frameworks of those countries were commonly described in a thematic approach and at key stages that were linked with the educational system for smooth implementation. Moreover, many of the relevant FC elements are being taught in the school subjects or content areas from simple to complex.

Use of FCF in School FE

It is ideally and preferably for introducing FCF as a mandatory and statutory component of the school curriculum to ensure sufficient time and resources at the implementation level (OECD, 2014). However, considering the constraints on most education systems (such as the crowded curriculum, inadequate resources, teachers' resistance, and so on), the most typical way is integrating FCF into the current subjects (e.g., mathematics, economics, citizenship, literature or history) or as a horizontal subject integrated in a wider range of classes in a voluntary basis (OECD, 2014). For examples, basing on the respective FCF, Australia has embedded "money and financial mathematics"

in the nation's mathematics curriculum and has provided "MoneySmart Teaching" resources to meet the needs of FE (Sawatzki, 2017), and New Zealand recommends FE as a theme that schools could use for cross-curricula teaching and learning (Ministry of Education, 2014; OECD, 2014). Indeed, such integrated and cross-curricula approaches not only promote FE in the school curriculum gradually, but also develop flexible engaging ways to link FL to the existing familiar subjects/topics for teachers and students (OECD, 2014). Students may more likely enjoy a mutual benefit to improve their financial skills by acquiring transversal competencies from different subjects like mathematics and social sciences subjects (Koh & Low, 2010, p. 14).

The Study Context

HK currently has the highest score (14.8) out of the 15 major countries or economies that scored between 12 and 14 in the International Survey of Adult Financial Literacy (OECD, 2020a). However, 59% of 15- to 19-year-old HK students struggle with money problems and only 9% of them have adopted even basic financial management practices such as keeping a detailed expenses journal (Ho & Lee, 2021). An increase in the life expectancy of HK citizens makes these shortcomings in basic skills at a young age potentially even more challenging and reinforces the need for meaningful FE from an early age. In fact, the latest HKFCF clearly layouts the FC framework (IFEC, 2019) for school children as shown in Table 1.

In Table 1, there are four key interconnected components in the school children FCF:

1. Attitudes (A) — one's thoughts and manner toward FL;
2. Motivations (M) — one's incentives for increasing FL;
3. Knowledge and Skills — one's basic concepts and skills for dealing with financial issues;
4. Behavior (B) — one's behavior as it relates to financial well-being.

Each of the four components contain a number of relevant competencies that are placed progressively across five key stages, including kindergarten (KG: K1–K3), key stage 1 (KS1: junior primary 1–3), key stage 2 (KS2: senior primary 4–6), key stage 3 (KS3: junior secondary 1–3), and key stage 4 (KS4: senior secondary 4–6). For example, Attitudes A1–A4 and A5–A8 are listed in K1–K3 and KS1 respectively. The description and examples of each element are separately listed in explanatory notes. Seven core themes

Table 1: The HKFCF for School Children

	Kindergarten (K1–K3) age 3–5	KS1 (P1–P3) age 6–8	KS2 (P4–P6) age 9–11	KS3 (S1–S3) age 12–14	KS4 (S4–S6) age 15–17
Attitudes (A)	<p>A1. Be appreciative when given things</p> <p>A2. Be happy when sharing things with others who are in need</p> <p>A3. Have a sense of achievement when recognized for making an extra effort</p> <p>A4. Respect the ownership of other people’s personal belongings</p>	<p>A5. Be conscious about consuming within one’s resources</p> <p>A6. Accept that one cannot have everything as one has only limited amount of resource (e.g., time, money)</p> <p>A7. Seek a trustworthy source of advice if one has a money issue</p> <p>A8. Be prepared to delay gratification in order to gain more in the future</p>	<p>A9. Withstand the influence of peer pressure and advertising on spending</p> <p>A10. Accept that money plays an important part in our life, but it is not the only source of happiness</p>	<p>A11. Accept that learning more about finance can help in making better financial decisions</p> <p>A12. Trust that it is cheaper “to save to spend” than “to borrow to spend”</p> <p>A13. Be responsible for managing one’s own cash</p> <p>A14. Accept that all investments carry a risk of losing value</p>	<p>A15. Accept that money needs to be actively managed</p> <p>A16. Be responsible for planning one’s own future</p> <p>A17. Take an interest in learning more about daily financial matters</p> <p>A18. Accept that investments with higher returns carry a higher risk of losing value</p> <p>A19. Appreciate the value of sound financial advice</p>
Motivations (M)	<p>M1. Curious about the use of money in real life situations</p>	<p>M2. Aspire to improve one’s life</p> <p>M3. Aspire to manage resources well to achieve a happier life</p>	<p>M4. Saving now is a way to be able to spend in the future</p> <p>M5. Being diligent can help pursue one’s goals for future betterment</p>	<p>M6. Good planning can help meet the financial needs of different life stages</p> <p>M7. Early planning can generate more options for achieving one’s goals</p>	<p>M8. A sensible financial plan can help one achieve one’s career goals and life goals</p>
Knowledge and Skills					
<i>Money & Banking (MB)</i>	<p>MB1. Recognize that different coins have different values and compare the value of coins</p> <p>MB2. Recognize that Octopus is a non-cash form of money commonly used in HK</p>	<p>MB3. Count coins and notes accurately, and put them in the correct order of value</p> <p>MB4. Recognize the functions and value of money</p>	<p>MB5. Recognize the different, common forms of money used in HK, and describe how they can be used as methods of payment</p> <p>MB6. Pay for goods and services with coins and notes, and calculate the correct change (cash settlement)</p> <p>MB7. Pay for goods and services by non-cash means</p>	<p>MB8. Explain the role of banks and basic types of bank accounts in HK</p> <p>MB9. Describe online financial services</p>	<p>MB10. Identify other services provided by banks and financial institutions in HK</p> <p>MB11. Recognize the costs associated with different methods of payment</p> <p>MB12. Explain why there are different currencies and exchange rates</p>

<i>Income & Taxation (IT)</i>	<p>IT1. List some ways where our daily needs are fulfilled as a result of someone making an effort</p> <p>IT2. List some ways where resources (e.g., money) can come from</p>	<p>IT3. Describe personal income sources for different people</p> <p>IT4. Recognize different types of income</p>	<p>IT5. Explore why people have different incomes and why these may change at different times</p>	<p>IT6. Explain the functions of public finance</p> <p>IT7. Describe the basic legislation concerning employment</p>	<p>IT8. List different types of financial compensation for employment</p> <p>IT9. Recognize the difference between gross and net salary/ income</p> <p>IT10. Explain how education/training affects career choices and may affect income later</p> <p>IT11. Describe the nature and purposes of taxation</p> <p>IT12. Identify factors affecting career choices and life planning</p>
<i>Saving & Investing (SI)</i>	<p>SI1. Recognize that things can be saved for future use instead of using it now</p> <p>SI2. Identify places to save things</p>	<p>SI3. Recognize the need to save money regularly</p> <p>SI4. Describe different ways to save money</p>	<p>SI5. Describe how interest is earned on money saved in banks</p>	<p>SI6. Explain and calculate simple and compound interest</p> <p>SI7. Explain the concept of inflation and time value of money</p> <p>SI8. Describe the nature and features of investment as a method of saving</p>	<p>SI9. Describe some common types of saving and investment choices</p> <p>SI10. Describe the basic concepts of risk and returns</p> <p>SI11. List some possible risks with, and returns from, different financial products</p>
<i>Spending & Credit (SC)</i>	<p>SC1. Differentiate between take, borrow, and exchange</p> <p>SC2. Describe some negotiations and exchange activities in school</p> <p>SC3. Describe how money can be used in an exchange (purchase)</p> <p>SC4. Realize that different items in a shop can have different prices</p>	<p>SC5. Differentiate between price and value</p> <p>SC6. Differentiate between needs and wants</p> <p>SC7. List and prioritize spending preferences, with reasons</p> <p>SC8. Describe the responsibilities of a borrower</p>	<p>SC9. Recognize the value and price of a product/ service</p> <p>SC10. Compare the pros and cons of buying through different channels (including online shopping)</p> <p>SC11. Calculate discounts</p> <p>SC12. Explain why people may need to borrow money</p> <p>SC13. Explain why people give money, time and effort to charities</p>	<p>SC14. Identify different sources of borrowing and the associated costs</p> <p>SC15. Have a realistic idea of the prices of the most consumable items</p>	<p>SC16. List factors that may affect changes in prices</p> <p>SC17. Identify different types of borrowing for different purposes</p> <p>SC18. Explain how a credit card works</p> <p>SC19. Calculate and explain the interest charged by banks and other financial institutions</p> <p>SC20. Differentiate "good" and "bad" debt, and describe the consequences of "bad" debt</p>

<i>Consumer Rights & Responsibilities (CR)</i>	CR1. Observe and follow the rules set when taking, borrowing or exchanging	CR2. Identify ways to find information about a purchase	CR3. Describe what a responsible consumer is and the reasons for protection CR4. Describe the basic rights of a consumer	CR5. Recognize the potential financial consequences of “free” offers CR6. Explain the basic regulations for protecting consumer rights	CR7. Describe the basic rights and responsibilities of buyers of financial products in HK CR8. Discuss the role of different financial institutions and financial regulators in HK CR9. Describe the major financial market functions, services and operations in HK
<i>Financial Planning (FP)</i>	FP1. Identify a way to keep track of things saved for future use	FP2. Identify short- and long-term financial goals	FP3. Develop a financial plan to achieve a short-term personal goal FP4. Explain the function of budgeting, and allocate money for different uses	FP5. Explain the process how to develop a long-term financial goal FP6. Link financial plans to budgets FP7. Develop a plan to pay for anticipated personal expenses in the near future	FP8. Explain how financial planning can help one to attain life goals FP9. Explain the need for retirement planning and the Mandatory Provident Fund (MPF) system
<i>Protection & Risk (PR)</i>	PR1. Identify ways to take care of oneself PR2. Recognize the need to take care of personal belongings PR3. Differentiate how personal belongings are owned by different people	PR4. Identify ways to protect personal belongings	PR5. Identify situations that may result in a financial loss for individuals PR6. Identify the risks of online shopping	PR7. Identify common types of financial fraud/scams PR8. Explain how savings can create protection	PR9. Describe the risks of using online financial services PR10. Explain the financial risks and drawbacks of having a poor credit record PR.11 Explain the basic functions of insurance
Behavior (B)	B1. Do not use everything immediately, form a saving habit B2. Report to parents about take, give (share), borrow and exchange activities B3. Ask before taking other people’s personal belonging	B5. Save regularly B6. Talk honestly about money with one’s family B7. Spend less than one’s available cash B8. Protect one’s personal belongings B9. Find some basic information about a potential purchase	B10. Borrow money only if one has the ability to repay it B11. Resist desires and control temptations to spend when shopping B12. Compare products and prices, and select the best purchase option	B16. Minimize spending where possible B17. Read and understand terms and conditions before deciding to purchase B18. Repay/return borrowed money/items as promised B19. Select the appropriate	B22. Explore the expenses of one’s family B23. Avoid impulsive purchases B24. Confront personal financial problems/ issues and seek help/advice B25. Make a life plan, with consideration

B4. Take care of personal belongings	B13. Set short-term financial goals	methods of payment for goods and services	of the financial implications
	B14. Allocate money to meet various financial goals	B20. Review financial goals and budgets regularly	B26. Choose a career path, with consideration of the financial implications
	B15. Keep track of weekly spending	B21. Use electronic tools to create a personal budget	

of the Knowledge and Skills component, including Money and Banking (MB), Income and Taxation (IT), Saving and Investing (SI), Spending and Credit (SC), Consumer Rights and Responsibilities (CR), Financial Planning (FP), and Protection and Risk (PR) are the focus of the FCF. In addition, the behavior component for financial well-being is spelt out in each of the stage.

The HKFCF for school children provides a roadmap for schools to carry out FE in HK flexibly with the ultimate outcome of enabling school children to achieve financial well-being and avoid the suffering from financial frauds. However, in HK, schools may complain that they cannot fully understand how to develop FE without detailed illustration of specific FC elements in the HKFCF, starting from knowledge and skills, motivations, attitudes, and behavioral changes (learning outcomes) (Hong Kong Council of Social Service, 2016; Youth I.D.E.A.S., 2019).

Moreover, some listed competences in the HKFCF are currently scattered in various school subjects without a proper coordination, such as how to spend money on buying toys, which is taught in General Studies in primary schools; how to calculate compound interest rates, which is taught in mathematics classes in junior secondary schools; and how to understand investments, which is taught in business subject classes in senior secondary schools. Without a proper coordination of FE in HK schools, students are mainly able to receive FE from peers or media instead of their schools (Investor Education Centre, 2015). This may limit the implementation of FE in schools even though HK is an important financial center and its citizens have many opportunities for investment and for being affected by various financial products.

Research Objectives and Questions

It can be seen that the effective use of the FCF in schools lies on a holistic curriculum framework and an overarching coordination on the learning outcomes, content areas, pedagogical approaches, resources and assessment of FE (OECD, 2014, 2020b). It is

necessary to conduct a mapping exercise to decompose the FCF to see their possible transferability across relevant subjects in the existing school curriculum (OECD, 2020b).

Hence, this study aimed to achieve the specific objective of mapping and analyzing of the school curricula with the latest HKFCF to identify the gaps of FE in HK, and to suggest the ways for advancing FE in schools of HK. The key research question was: To what extent can the FC elements listed in the HKFCF be embedded in the school curricula of HK? The cross checking of the HKFCF with school curricula in this study allows a mutual understanding of possible FE implementation in HK. The findings of this study are not only stock-taking the possible implementation of the HKFCF in schools but also providing an overarching curriculum framework of FE for the HK school sector.

Methodology

Marton et al. (1993) indicated that qualitative research is a means to answering questions about the nature of human phenomena because it focuses on meaning and understanding. This study's proposed objectives sought to find meaning in human experience, and therefore, it was reasonable to apply a qualitative methodology in the study. Curriculum mapping "... is an invaluable tool that can help schools ... sifting, sorting, aligning, and organizing their curricular closets" (Erickson, 2004, p. vi) and "... an analysis and assessment of a school's current curriculum offerings in relation to prescribed competencies or standards of performance" (Benade, 2008, p. 95). Curriculum mapping is the process indexing a curriculum to identify and address academic gaps, redundancies, and misalignments for purposes of improving the overall coherence of a course/area of study and, by extension, its effectiveness. There are four common types of curriculum mapping: (a) *vertical coherence* — curriculum is vertically coherent when it is logically sequenced within a study; (b) *horizontal coherence* — curriculum is horizontally coherent within the same level of study; (c) *subject-based coherence* — curriculum is coherent within a subject area; and (d) *interdisciplinary coherence* — curriculum is coherent across multiple subject areas within and across grade levels (Schweitzer, 2019).

The curriculum mapping in this study is an interdisciplinary coherence that refers to how well and to what extent a school curriculum has matched the prescribed competency standards of FL in the HKFCF. With reference to the study, mapping the FC elements in the HKFCF with local school curricula (Curriculum Development Council, 2010, 2017a, 2017b, 2017c, 2017d; Curriculum Development Council & Hong Kong Examinations and

Assessment Authority; 2014, 2015a, 2015b, 2020, 2021; Education Bureau, 2021), and including the current themes/subjects in kindergarten, primary, and secondary education, were conducted. All of the prescribed FC elements and their relevant explanatory notes in the HKFCF were mapped with all of the theme/subject/program content areas in the kindergarten, primary, and secondary school curricula.

Under the existing curriculum structure in HK, students are required to study six themes in kindergartens (Physical Fitness and Health, Languages [Chinese and English], Early Childhood Mathematics, Nature and Living, Self and Society, and Arts and Creativity); eight subjects in primary schools (Chinese, Putonghua, English, Mathematics, General Studies, Music, Visual Arts, and Physical Education); and four core subjects in secondary schools (Chinese, English, Mathematics, and Citizenship and Social Development) and also to choose from one to four elective subjects from among the twenty subjects available. All the teaching syllabus, topics, content areas and explanatory notes of each individual curricula were thoroughly studied and analyzed to see their possible alignment with those listed FC elements in the HKFCF throughout the mapping exercise. However, the language subjects in primary and secondary schools are excluded due to the possible large variations that exist in the current practice of self-chosen and tailor-made learning materials in language studies. In the content analysis of curriculum mapping, the adaptability and feasibility of FC in the curriculum were considered throughout the analytical process.

For example, the FC elements A4 is cultivating an attitude of “respect the ownership of other people’s personal belongings” and it is expected that kindergarten students not to take, use or damage things (toys, food, money, etc.) that do not belong to them without the owner’s permission. After studying the six teaching themes of the kindergarten curriculum, it was found that the key language learning objective is to develop the attitude and confidence in interacting with people and their environment using simple English; the possible example of learning and teaching activity in kindergarten is asking for permission before taking things that do not belong to you by saying “May I borrow your book?” or “May I have one candy or one piece of biscuit?”. Moreover, a similar learning and practice of courtesy in making friends would happen in the teaching and learning of the Self and Society theme in view of its learning objective of “to respect others and get along well with them.” Then, the FC element, A4 were positively mapped with both the language, and Self and Society themes in the mapping exercise. Some other mapping examples of subjects in primary and secondary schools are listed in Table 2 to illustrate the process of mapping.

Table 2: Illustrative Mapping Examples of Some Subjects in Primary and Secondary schools

Subject, Level and Content	Mapping with FC Elements listed in the HKFCF
General Studies K2 (P4–P6)	Attitudes
<i>Strand 4: Community and Citizenship</i>	A10. Accept that money plays an important part in our life, but it is not the only source of happiness
The importance of participation in local affairs, e.g., participating in fund-raising activities or voluntary work in the community	Knowledge and Skills
	SC13. Explain why people give money, time and effort to charities
Mathematics, K2 (P4–P6)	Knowledge and Skills
<i>Number Strand: Use number to formulate and solve problems, e.g., decimals and percentages</i>	SC11. Calculate discounts
	SI5. Describe how interest is earned on money saved in banks
Life and Society K3 (S1–S3)	Attitudes
<i>Core module (11): Sensible Consumption</i>	A13. Be responsible for managing one's own cash
<i>FPREA02 Rights and Responsibilities of Sensible Consumer</i>	Knowledge and Skills
• Principles of choosing goods and services	CR4. Describe the basic rights of a consumer
• Rights and responsibilities of consumers	CR6. Explain the basic regulations for protecting consumer rights
• Social responsibilities of consumers	Behaviors
• Regulations and organizations responsible for protecting consumer rights	B12. Compare products and prices, and select the best purchase option
	B17. Read and understand terms and conditions before deciding to purchase

Burns (1994) suggested that “reliability” in qualitative research is “a fit between what they [qualitative researchers] record as data and what actually occurs in the setting under study” (pp. 245–246) and that personal bias needs to be reduced so that other researchers can follow the methods and achieve the same results. Any research processes and outcomes must be demonstrated in a thorough way so that others can feel assured that they are derived from the data systematically (Tesch, 1987). To achieve that level of truthfulness in the study, all of the raw data, data reduction, analytic procedures, and product notes were kept in an audit trail to ensure that the findings were grounded in the data. However, the findings of this study are limited to the mapping and alignment of all the prescribed FC elements that are entailed in educating students, excluding the actual practice of assessments, textbooks, assignments, lessons, and instructional techniques in a specific period and context of HK only. The curriculum mapping and follow-up suggestions may not fully meet the FE needs and ever-changing demands in the HK society.

Findings

Tables 3–5 show where the relevant FC elements from the HKFCF are identified exactly or similarly within the current themes/subjects in the curricula for kindergarten (Table 3), primary school (Table 4), and secondary school (Table 5).

Table 3: Curriculum Mapping with Learning Themes in HK Kindergarten Curriculum

FCF FC elements in kindergarten learning themes	Expected FC elements stated in the HKFCF	Physical Fitness & Health	Languages (Chinese & English)	Early Childhood Mathematics	Nature and Living	Self and Society	Arts and Creativity
Attitudes	1–4		1,4			1–4	1
Motivations	1					1	
Knowledge and Skills							
<i>Money & Banking (MB)</i>	1–2	1	1–2	1	2	2	1
<i>Income & Taxation (IT)</i>	1–2		1–2	2		1–2	
<i>Saving & Investing (SI)</i>	1–2			1		2	2
<i>Spending & Credit (SC)</i>	1–4		1–3	3–4		1–4	
<i>Consumer Rights & Responsibilities (CR)</i>	1					1	
<i>Financial Planning (FP)</i>	1			1			1
<i>Protection & Risk (PR)</i>	1–3		2			1–3	2
Behavior	1–4	2	2–4	1–2		1–3	

Note: In Tables 3–5, all the expected FC elements and their numbers stated in the HKFCF for the particular school stages are shown in the first column and the shaded column(s) for easy reference and their relevant FC element numbers are indicated in the corresponding themes/subjects once if they are positively mapped with each other. Those mapped numbers that are beyond their respective stages would be highlighted in grey in the tables.

All the FC elements of KG stage in the HKFCF were being able to map with the six teaching themes of the KG curriculum. Three out of the six teaching themes (Languages, Early Childhood Mathematics, and Self and Society) were mapped with the most relevant FC elements stated in each of the four primary components: Attitudes, Motivations, Knowledge and Skills, and Behavior. In particularly, the teaching theme Self and Society was able to teach nearly all the FC elements of KG stage except FP.

Table 4: Curriculum Mapping with Subjects and Curricula in HK Primary Schools

FC/FC elements in primary subjects	Expected FC elements stated in the HKFCF	KS1 (P1–P3)		Expected FC elements stated in the HKFCF	KS2 (P4–P6)	
		General Studies	Mathematics		General Studies	Mathematics
		Attitudes	5–8		5–7,9	5
Motivations	2–3	2		4–5	4	
Knowledge and Skills						
<i>Money & Banking (MB)</i>	3–4	4–5,7	1, 3–4,6	5–7	5,7	3
<i>Income & Taxation (IT)</i>	3–4	3		5		
<i>Saving & Investing (SI)</i>	3–4	3–4		5	3–5	5
<i>Spending & Credit (SC)</i>	5–8	6–7,9–10		9–13	6–7,9–10,13	9,11
<i>Consumer Rights & Responsibilities (CR)</i>	2	3–4		3–4	3	
<i>Financial Planning (FP)</i>	2		4	3–4	2–4,6–7	4
<i>Protection & Risk (PR)</i>	4	4		5–6	4,6	
Behavior	5–9	5–7,12	7,12,15	10–15	5–7, 11–12,14,16	15

In the KS1 and KS2 stages (i.e., the junior and senior primary levels), most of the FC elements of the HKFCF in these two stages could mostly be mapped with two subjects, General Studies and Mathematics (i.e., two out of the eight subjects, or 25%), especially for the General Studies. Some FC elements in the components of Attitudes (A9 in KS1, and A13 in KS2), Knowledge and Skills (MB 5–7, SC9–10, CR3–4, FP4 in KS1; and FP6–7 in KS2), and Behavior (B12&15 in KS1, and B16 in KS2) were even mapped beyond their respective stages (see the highlighted numbers in Table 4). In whole, the FC elements of the HKFCF in KS1 and KS2 stages were richly and evenly distributed in the subject General Studies.

In the total number of 24 subjects in the KS3 and KS4 stages, seven out of the 11 mapped subjects in Table 5 contained various relevant FC elements in the HKFCF, in which Mathematics, and Citizenship and Social Development are the core subjects and the remaining five are optional subjects, including Life and Society; Life Planning Education and Career Guidance; Technology Education; Business, Accounting and Financial Studies (BAFS); and Economics. Some identified FC elements in the components, for example, Attitudes (A27 in KS3), Knowledge and Skills (M8, MB10–12, IT8–16, SI9–10&16, SC16–17, FP8&13, PR9 in KS3; and M10, MB13–14, IT13–14, SI13&19, SC22&24, FP12–16, PR12&17 in KS4) and Behavior (B23–26, 45–46&50 in KS3; and B38, 41&47

in KS4) were even extended beyond the target stages and reach the adult stage in the seven subjects (see the highlighted numbers in Table 5). Most relevant FC elements of the HKFCF were quite comprehensively covered in two junior secondary subjects (Life and Society, and Technology Education) and two senior secondary subjects (Life Planning Education and Career Guidance, and BAFS).

Table 5: Curriculum Mapping with Subjects and Curricula in HK Secondary Schools

FCF FC elements in secondary subjects	Expected FC elements stated in the HKFCF	KS3 (S1-S3)				Expected FC Elements Stated in the HKFCF	KS4 (S3-S6)						
		Life & Society	Life Planning Education & Career Guidance	Technology Education	MATH		Life Planning Education & Career Guidance	Citizen-ship & Social Development	BAFS	ECON	ICT	HMSC	MATH
Attitudes	11-14	9-14,27	7	6,10	14	15-19	13,15,17	11, 16,17	11,13, 17,19		17	9-10	17
Motivation	6-7	6-7	7-8			8	6-8	8	10				
Knowledge and Skills													
Money & Banking (MB)	8-9	4-5,7-9, 10-11		2,5,7,9	12	10-12	8-10	9,10	9,14	1,4-5, 7-8, 10,12, 13-14	6,8-9		11-12
Income & Taxation (IT)	6-7	5-6,8-11, 13	5,7,10	8-9,11, 13-16	6,11	8-12	8-10,12	6,12		6,8, 11,13		3-6, 10-14	8-9,11
Saving & Investment (SI)	6-8	3,6,10,16		1,6-9	5-6,8	9-11		9-11	4,6-7, 9, 11-13, 19	7,11			6, 10-11
Spending & Credit (SC)	14-15	6-8,12-16		7,9-11, 15,17	11,15	16-20	14,17,19,20	10	17-19, 22,24	6,9	10	13,16	18-19
Consumer Rights & Responsibilities (CR)	5-6	4,6		2,4,6		7-9	6		7,8,9	5			
Financial Planning (FP)	5-7	2-3,5-7	2-3,5,8	4,6,13	4,7	8-9	2,5,8-9,12		7-9, 13-14, 16			3,8, 13-16	8-9
Protection & Risk (PR)	7-8			6,9	8	9-11		6		17	6-7,9	11-12	11
Behavior	16-21	6,12,17, 20-21	13,20, 24-26	9,12, 19-21, 23, 45-46,50		22-26	13,17, 25-26,47		18, 20-21, 24-26, 41		19,21, 38	23,25	

Note: BAFS = Business, Accounting and Financial Studies; ECON = Economics; ICT = Information and Communication Technology; HMSC = Health Management and Social Care; MATH = Mathematics.

Discussion

By referring to Tables 3–5, one can identify from the mapping exercises the FC elements in each of the school stages in the relevant school curricula. As a result, the FC elements of the HKFCF can be possibly taught via certain themes/subjects, starting from kindergarten and progressing through primary and secondary education despite they are taught in a scattershot way. A systematic coordination of these FC elements throughout the existing educational system could greatly help in raising the quality of FE in schools. For examples, kindergartens and primary schools can intensively introduce the relevant FC elements through the theme of Self and Society and the subject of General Studies respectively by referring to their close subject nature of how individual can well develop and connect to the society. In junior secondary schools, it is sensible to embed FC elements in the most relevant subjects Life and Society and Technology Education since these two subjects cover self-understanding, competence skills to meet daily and future challenges, and pursue life goals in the society. Hence, these two subjects are good venues for advancing FE in junior secondary schools. In senior secondary schools, Life Planning Education and Career Guidance and BAFS are the two key subjects that contain many relevant FC elements due to their subject nature being career and business-oriented. However, these most relevant four subjects to advance FE are optional subjects in the existing secondary school system. Secondary schools need to pay a special attention to the optional arrangement of these subjects to ensure their students' learning opportunities of FE. Alternatively, since Mathematics is a core subject throughout primary and secondary education, it could play a significant role in equipping students with the foundational skills of FL (Kasman et al., 2018) through embedding the majority FC elements in the relevant Mathematics curriculum, such as what was done in Australia (Sawatzki, 2017). It is believed that a comprehensive FL curriculum and assessment guide would be beneficial to HK in order to advance the implementation of FE in schools (Zhu et al., 2019).

If teachers are not alert to and properly trained in teaching the FC elements, the effectiveness and efficiency of introducing those FC elements in the school sector are questionable. Through the findings shown in Tables 3–5, teachers can gain a holistic understanding of how FC elements of the HKFCF would be embedded in the school curricula and their specific areas of teaching. Teachers can make further reference to the explanatory notes of those FC elements in preparing their teaching. Providing teacher training on how to teach the FC elements in the different key stages is advisable. Moreover,

schools may consider to offer FL through pilot programs in some chosen schools to identify the most appropriate approach before formally introducing FL into the school curriculum.

Furthermore, the extent to which the existing FE programs in the school sector are effectively linked with the FC elements of the HKFCF is in doubt. The actual benchmarking of the courses/programs with the HKFCF depends on the evidence-based learning outcomes shown by the learners. So far, no explicit common assessment tools exist for measuring the learning outcomes of the HKFCF, other than those observable behaviors stated in the HKFCF and some IFEC-issued guiding assessment principles for measuring FL. A common set of assessment tools for measuring the FL level to provide easy reference in local and international contexts is sorely needed.

Actually, one important function of the HKFCF is to provide a theoretical framework to develop and validate the measurement of FL for HK people. According to the model of developing scale in measuring complex phenomena of Boateng et al. (2018), the assessment tools for measuring FL levels in the local context can be identified through three phases that span nine steps. In the first phase, the FC elements of the HKFCF for school children can firstly be (a) generated and (b) validated for the content of the assessment. By turning all these FC element items into a harmonious and measuring construct, a scale development can be made in the second phase through (c) pre-testing the questions, (d) sampling and administering the survey, (e) reducing the number of items, and (f) understanding how many factors the scale captures. In the third phase, scale evaluation can be made through tests of (g) dimensionality, (h) reliability, and (i) validity. In addition, the “Big Three” standardized set of questions were developed by Lusardi and Mitchell (2008, 2011a, 2011b, 2014) to measure how well people are equipped with three fundamental concepts of “interest rate, inflation and risk diversification” for daily financial decision-making in every context and economic environment (Lusardi, 2019). These “Big Three” questions were widely applied in surveying FL in both public and private sectors around the world (Lusardi, 2019), and schools in HK can consider to embed the “Big Three” questions to measure the learning outcomes of FE at different levels too.

As a positive strategy for educational improvement, Stoll (2020) advised that various stakeholders, such as school and community leaders, teachers, parents, policy makers, and politicians, need to be learning individually, together, and across levels with an open-minded attitude, in order to achieve transformative learning for the sake of the students’ interests. Therefore, an effective FE demands the active engagement of all these key stakeholders to support the policy making and assign the resources to advance FL. Schools in HK will need

to devote substantial work toward gaining policy and operational support at different levels of FE in the near future.

Conclusion

Financial competencies are essential skills nowadays, especially in HK, because HK is an important financial center and its citizens have many opportunities for investment and for being affected by various financial products. From the findings, FC elements of the HKFCF are currently covered in various school learning themes and subjects that allow a more comprehensive FE learning. For a better overarching coordination of FE in HK schools, it is possible to embed the most relevant FC elements in a specific learning theme of Self and Society in kindergarten; General Studies in primary subject; Life and Society, and Technology Education in junior secondary subjects; and Life Planning Education and Career Guidance, and BAFS in senior secondary subjects. It is suggested to further conduct empirical studies on validating all the embedded FC elements in the proposed curriculum shortly. On top of a well-coordinated curriculum for the whole range of school system, relevant implementation guide, teacher training, and assessment tools are also needed through a concerted effort of the stakeholders to advance FE in HK. More in-depth study on school principals' and teachers' view on implementation of FE in schools, and trial run of some tailor-made FE curriculum in different school contexts are urgently needed.

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推動香港理財教育的學校課程地圖

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摘要

理財（金融）素養是 21 世紀的一項重要生存技能，賦予學童作出明智財務決策的能力已變得至關重要。財務能力框架描述了一系列基本的財務能力要素，使人們具備財務知識、技能、態度、行為和動機，以實施和評估個人的理財（金融）素養，這亦是學校協調統整理財教育的可靠參考方法。然而，香港的學校理財教育分散在某些科目中，並沒有充分引入香港財務能力框架中的財務能力元素。因此，本研究首先對學校理財教育的重要性以及財務能力框架在學校理財教育中的使用進行了文獻回顧，並以香港為例，通過對照學校課程地圖方式來審查其財務能力框架在學校課程中的使用，最後提出建議，以此推進學校理財教育。研究發現，大多數財務能力元素都與香港學校課程的各種學習主題或科目很好地對應起來，尤其是幼稚園的「個人與群體」學習主題、小學的「常識科」，以及四門中學科目，包括「生活與社會」、「科技教育」、「生涯規劃與事業輔導」、「企業、會計與財務概論」。這些財務能力元素可以進一步與學校實施指南、教師培訓計劃和評估工具相協調，以推進香港的理財教育。

關鍵詞：理財（金融）素養；理財能力框架；理財教育；學校課程；學校課程地圖