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The Education University
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A Project entitled

*Exploring teachers' perception of gamification for promoting Personal Financial Education
in Hong Kong secondary schools.*

Submitted by

Ng Hok Yu

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Declaration

I, *Ng Hok Yu*, declare that this research report represents my own work under the supervision of *Professor (Practice), Prof. YU Wai Mui, Christina*, and that it has not been submitted previously for examination to any tertiary institution.

Signed

Ng Hok Yu

22 April 2022

Table of Contents

Declaration	P.2
Acknowledgements	P.5
Abstract	P.6
1. Introduction	P.7
2. Literature Review	P.8-18
2.1 Personal Financial Education (Financial Education)	P.8-12
2.2 Gamification	P.13-18
2.3 Linkage between Personal Financial Education and gamification	P.18
3. Research Questions	P.19
4. Methodology	P.20-22
4.1 Research design and Data collection method	P.20
4.2 Sampling method	P.20-22
4.3 Data analysis method	P.22
4.4 Trustworthiness of this study	P.22
5. Findings	P.23-40
5.1 The current situation of promoting Personal Financial Education in Hong Kong secondary schools (Interview Question 1)	P.23-30
5.2 Teachers' perception of gamification (Interview Question 2)	P.30-32
5.3 Teachers' perception of the linkage between Personal Financial Education and gamification (Interview Question 3)	P.33-34
5.4 The potential benefits, costs and challenges of applying gamification to promote Personal Financial Education (Interview Question 4)	P.35-40

6. Discussion	P.41-53
6.1 The current situation of promoting Personal Financial Education in Hong Kong secondary schools (Research Question 1)	P.41-44
6.2 Teachers' perception of gamification and its linkage with Personal Financial Education (Research Question 2)	P.45-47
6.3 The potential benefits, costs and challenges of applying gamification to promote Personal Financial Education (Research Question 3)	P.47-53
7. Limitations	P.54
8. Conclusion and Recommendation	P.55
9. References	P.56-61
10. Appendixes	P.62-65

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Abstract

Nowadays, Personal Financial Education has been much more valued than ever before. Following the global education trend, Hong Kong starts to promote Personal Financial Education to a certain extent. Notwithstanding, the Hong Kong education sector tends to rely on traditional formal teaching and learning approaches. On the other hand, there are many newly emerged 21st century teaching and learning strategies and gamification is one of the representations. However, there is a lack of local research which studies the relationship between Personal Financial Education and gamification. To fill this research gap, this study explored teachers' perception of gamification for promoting Personal Financial Education in Hong Kong secondary schools. The qualitative research method was adopted and semi-structured interviews were conducted for collecting primary data from 10 in-service Business teachers. The findings suggest that there are some limitations in the current promotion of Personal Financial Education in Hong Kong secondary schools. This lays the groundwork for exploring new promotion approaches, including gamification. The findings also demonstrate that teachers perceived gamification comprehensively and they believed gamification is applicable for promoting Personal Financial Education. Given the positive relations between the two, teachers identified and analyzed the potential benefits, costs and challenges as well. These findings provide useful implications for the education field to further explore how gamification can be applied to promote Personal Financial Education in Hong Kong.

Keywords:

Personal Financial Education, Gamification, Financial Literacy, Informal Learning,
21st Century Teaching and Learning

1. Introduction

In 2005, the Organisation for Economic Co-operation and Development (OECD) published a list of principles and practices for the international advocacy of Financial Education (OECD, 2005). OECD emphasizes that Financial Education should be implemented at schools and financial concepts should be delivered to students as early as possible (OECD, 2005). Thereafter, many countries and regions gradually incorporate Financial Education into their education systems. In Hong Kong, Financial Education is commonly known as Personal Financial Education. The Education Bureau suggests secondary schools implement a school-based curriculum to promote Personal Financial Education in some non-compulsory subjects through the formal learning channels (Education Bureau, 2007, 2010).

However, students living in the 21st century are growing up in the era of a digital world. In today's educational setting, pedagogies are not limited to formal teaching and learning strategies. According to Kim et al. (2018), the use of gamification in teaching and learning gradually receives significant attention across the education sector as students nowadays are keen on playing electronic games. Thus, it is worth discussing the use of gamification for promoting Personal Financial Education in Hong Kong. Unfortunately, not much existing local research has been conducted in exploring the relations between the two as gamification is not a universal education approach in Hong Kong. Hence, this study aims to explore the perception of teachers on gamification for promoting Personal Financial Education in Hong Kong secondary schools. The findings are expected to provide contributions to the local education sector since first-hand opinions from teachers' points of view on gamification for promoting Personal Financial Education in Hong Kong secondary schools are revealed.

2. Literature Review

2.1 Personal Financial Education (Financial Education)

(a) Definition

The OECD provided an authoritative definition of Financial Education. According to the OECD (2005), Financial Education is defined as follows:

The process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being. (p.4)

(b) Importance of Financial Education

The above definition suggests that Financial Education is not simply a one-off delivery of theories and information. Indeed, it is a holistic and ongoing learning process. Previous studies have demonstrated that Financial Education is vital to individuals, families and society.

(b)(i) Individual level

In terms of individuals, Financial Education is important for improving one's financial literacy. Financial literacy represents one's competency to make astute financial decisions and achieve financial well-being through the integration of financial awareness, knowledge, skills, attitudes, and behaviors (Atkinson & Messy, 2012). For example, Financial Education strengthens learners' ability to identify financial pitfalls and cope with financial dilemmas they may confront in different life stages (Investor and Financial Education Council [IFEC], 2022).

Financial Education is particularly influential on young individuals since positive attitudes toward financial planning and management should be cultivated as early as possible (IFEC, 2019). Proper financial attitudes facilitate young individuals to set and pursue their life goals, which possibly influence their financial behaviours, such as reducing unnecessary spending, saving more money, accumulating assets, and ultimately accomplishing financial independence.

(b)(ii) Family level

In terms of families, Financial Education would influence household finance. As refer to local research conducted by the Hong Kong Council of Social Service [HKCSS] (2016), Financial Education is not limited to individuals, it also encompasses the idea of household financial management. Individual involvement in the household's financial decision-making is necessary. Through Financial Education, family members can learn how to meet their financial needs and plan for the future, such as minimizing expenditures and allocating resources properly for family planning and child development.

Financial Education is typically important for low-income families. According to IFEC (2019), Financial Education is a desirable means for underprivileged families to learn how to achieve self-reliance by managing their finances and choosing appropriate financial instruments to reduce their financial burdens. If parents from the low-income groups possess proper financial skills and attitudes, it is more likely to prevent intergenerational poverty as parents can encourage their children to accumulate wealth and strive for upward mobility.

(b)(iii) Societal level

At the societal level, Financial Education is expected to be beneficial to the development of our society. As Kwok (2020) asserted, a well-implemented Financial Education is expected to create positive effects on the sustainable development of our society. Through the promotion of Financial Education, the financial literacy of the general public can be enhanced. Hence, it will be less likely for people to be in poverty or become bankrupt and seek support from the social safety net. In this way, the government does not need to devote excessive financial resources to shield a large group of people who fall into the social safety net. Conversely, the government can allocate its resources to other aspects, such as education, infrastructure, medication, etc. As a result, the financial burdens shouldered by the government and taxpayers can be reduced, which facilitates the sustainable development of society.

(c) Current education policies for promoting Personal Financial Education in Hong Kong

Currently, Hong Kong does not implement a compulsory curriculum for promoting Personal Financial Education. The school-based curriculum plays a significant role, in which secondary schools enjoy high flexibility in promoting Personal Financial Education (HKCSS, 2016). As for junior secondary level, schools can choose to offer the *Life and Society* subject. The subject syllabus covers some basic financial knowledge, such as ‘Money Management’, ‘Banking Services’ and ‘The Consequences of Gambling’ (Education Bureau, 2010). As for senior secondary level, students who take *Business, Accounting and Financial Studies (BAFS)* subject under the New Senior Secondary (NSS) curriculum can also learn several Personal Finance topics, including ‘Time Value of Money’, ‘Consumer Credit’, ‘Personal Financial Planning and Investment’, and ‘Stock Trading as an Investment’ (Education Bureau, 2007).

(d) Informal learning channels for promoting Personal Financial Education in Hong Kong

Despite the limited formal curriculum and policies, some informal learning channels are available as alternatives for promoting Personal Financial Education in Hong Kong. Those informal learning channels are available within and outside the schools.

(d)(i) On-campus learning channels

Previous research revealed that some schools are willing to organize different activities within their schools for promoting Personal Financial Education. According to HKCSS (2016), some schools consider the promotion of Personal Financial Education as an extra-curricular activity or ‘Other Learning Experience’ (OLE). For instance, schools may organize competitions, talks, workshops and seminars related to Personal Finance for their students. Depending on the efforts of teachers and the availability of resources, schools would organize those activities by themselves or they may cooperate with external parties (Kwok, 2020).

(d)(ii) Off-campus learning channels

Some previous studies identified that it is common for Hong Kong adolescents to acquire financial knowledge and information outside the schools, such as from media, friends, and particularly their family members (HKCSS, 2016; Pang, 2016; MWYO, 2016).

Both the on-campus and off-campus informal learning channels are popularized in Hong Kong and they provide more opportunities for students to learn about Personal Finance. Hence, this research is going to explore how teachers perceive gamification and whether they think it is a suitable informal learning approach for students to learn about Personal Finance.

(e) Constraints of the current promotional channels

A number of local studies showed that there are some constraints on the above-mentioned formal and informal promotional channels.

(e)(i) Constraints of formal learning channels

Even though some students learn financial knowledge at schools via the formal learning channels, however, it is limited to a relatively small extent. A study conducted by the Investor Education Centre (IEC) pointed out that the current implementation of Personal Financial Education in Hong Kong is disorganized since it is non-compulsory and is scattered into different subjects (IEC, 2015). Another research conducted by HKCSS explained that financial literacy is essential for everyone, but the current policies hinder some students to learn about Personal Finance as Personal Financial Education is not mandatory. Along with the tight teaching schedule and heavy workload of teachers, Personal Financial Education hasn't been placed a high priority in schools (HKCSS, 2016). Consequently, students cannot acquire financial knowledge systematically and continuously.

(e)(ii) Constraints of informal learning channels

Informal learning channels also share similar problems. Pang (2016) argued that informal learning channels are unsystematic for teenagers to learn financial concepts and the accuracy of the knowledge is questionable. According to IEC (2015), some Hong Kong students are not satisfied with such kinds of informal learning channels, as they doubt the information given by the media as well as their family and friends. They expressed their need for polishing their financial knowledge and skills in a much more organized and systematic way.

2.2 Gamification

(a) Definition

Gamification generally refers to the application of game features to non-game activities. According to Kapp (2012), gamification is a process of engaging people, encouraging action, promoting learning, and solving issues by utilizing game-based mechanics, aesthetics, and game thinking. Unlike a single electronic game which is designed for entertainment only, gamification is a series of activities with systematic procedures that use the features of game components to help users address specific problems and achieve targets (Kim et al., 2018). When gamification is applied for educational purposes, it turns into a series of activities with systematic procedures and game elements which facilitate the learners to handle problems related to learning and achieve different learning objectives (Kim et al., 2018).

(b) Global trend of using gamification

Even though gamification is a relatively new idea, it has been popularized around the globe. According to Bozkurt and Durak (2018), although the idea of gamification emerged in 2008, its acceptability and popularity drew significant attention around the world in just a decade. Besides, OCED (2019) stated that the global trend of using gamification is supported by the growing number of searches for ‘Gamification’ on Google. As referred to Figure 1, the number of Google searches for ‘Gamification’ increased prominently from 2010 and it keeps stayed at a very high rate in recent years.

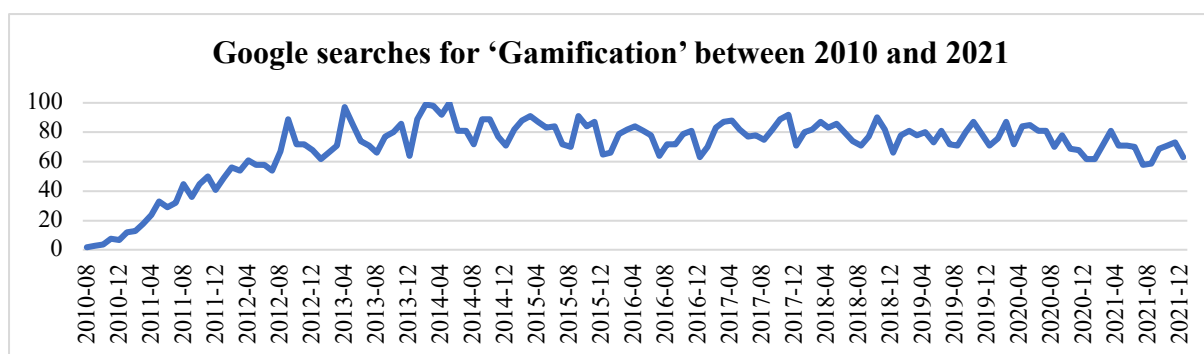


Figure 1: Google searches for ‘Gamification’ between 2010 and 2021 (Google, 2022).

Note: Numbers on the vertical axis represent search interest relative to the highest point on the chart for the given region and time. A value of 100 represents the peak popularity of the term.

(c) Common benefits of gamification to teaching and learning

A myriad of scholars and studies reported that gamification is beneficial to teaching and learning because it provides a number of benefits to both students and teachers.

(c)(i) Enhancement in students’ learning motivation and engagement

One of the paramount benefits of gamification is enhancing students’ learning motivation and engagement. Kiryakova et al. (2014) asserted that the lack of learning motivation and engagement of students is the major crux of causing teaching and learning ineffective. Providentially, gamification makes the learning processes much more interesting and engaging (Apostol et al., 2013). Zainuddin et al. (2020) pointed out that the elements of game mechanics, such as badges, levels and leader boards provide a favorable impact on learners’ motivation. This is because winning games is a positive reward in exchange for the effort a learner spent, which motivates the learner to keep engaging in the learning activities (Kiryakova et al., 2014). Mohamad et al. (2018) also affirmed that the use of gamification encourages learning engagement as it provides a more adaptable learning environment which can match the learning processes with learners’ learning styles and interests.

(c)(ii) Enhancement in students' learning achievements

Besides, gamification can also enhance students' learning achievements. It has been proved that learning achievement is associated with the level of motivation and engagement (Liew et al., 2018; Zainuddin et al., 2020). By means of gamification, students enjoy more room to learn from failure, in which they would feel less embarrassed about making mistakes and inspired to find out the rationale behind the correct answers (Liew et al., 2018). As a result, gamification provides valuable learning experiences for students to enrich and consolidate their knowledge, which is one of the most significant learning outcomes that every educator wants to achieve (Kim et al., 2018). Apart from knowledge, gamification also facilitates students to boost their higher-order thinking through the process of playing games with different scenarios and difficulties (Domínguez et al., 2013; Zainuddin et al., 2020). As mentioned, applying gamification in education is not aimed at entertaining students. Instead, gamification facilitates students to achieve the learning objectives with improvements in both knowledge and skills, which is the fundamental goal of education (Kiryakova et al., 2014).

(c)(iii) Enhancement in teaching effectiveness

Teachers are benefited from gamification given that it can strengthen teaching effectiveness. As Kiryakova et al. (2014) stated, it is crucial for teachers to monitor students' learning progress so as to ensure students can catch up with the learning process and meet the targeted learning objectives. Domínguez et al. (2013) indicated that it is time-consuming for teachers to evaluate students' learning outcomes in traditional teaching, which reduces the teaching effectiveness. On the contrary, Landers et al. (2015) and Kim et al. (2018) stated that gamification is an instructional approach which helps improve teaching effectiveness. Under

gamification, the game level attained by students serves as an indicator for teachers to monitor students' performance and give immediate feedback to students (Kim et al., 2018). Timely and proper feedback allows students to make corrective actions quickly and thus improving the effectiveness of teaching (Kiryakova et al., 2014).

(c)(iv) Enrichment in teachers' pedagogies

Gamification can be viewed as a way of enriching teachers' pedagogies. According to Landers et al. (2015), gamification is not a replacement for teacher-delivered instructions. A desirable gamified learning activity is expected to be led by teachers who can guide students to learn progressively. Hence, teachers need to supplement and extend the gamified learning activity with diverse and innovative pedagogies. In this way, the whole teaching and learning process would be much more comprehensive and interesting. Saleem et al. (2021) also stated that gamification is a teaching approach which 21st century teachers ought to master since it helps teachers create an effective and inclusive learning environment for students with different characteristics to learn together.

(d) Common costs and challenges of applying gamification

In spite of the above-mentioned benefits, previous research has identified some common costs and challenges of applying gamification.

(d)(i) Time constraints and time costs

Time constraints and time costs are one of the most obvious hindrances for teachers to apply gamification in their classrooms. As gamification is still relatively new to the education

field, this kind of innovative learning approach requires both teachers and students to spend numerous of time getting used to it (Saleem et al., 2021). According to Bada and Olusegun (2015), it is believed that the time and effort required to create gamified learning environments outweigh its advantages. Mumtaz (2000) also mentioned that more time is needed for teachers to design gamified activities and it would be a waste of time if students misinterpret the intention behind the gamified activities.

(d)(ii) Students' characteristics

Students' characteristics is another factor which may influence the implementation of gamification. As Landers et al. (2015) asserted, gamification is not a replacement but a reinforcer of traditional teaching and learning which helps students learn better. This implies that students play a dominant role in their learning process. Ružić and Dumančić (2015) argued that students' behaviours and attitudes would affect the effectiveness of gamification. If students are not actively participating in the activities or they are not willing to devote much cognitive effort to the learning process, it would be less likely for them to fully enjoy the benefits of gamification.

(d)(iii) Misconceptions

A number of scholars pointed out that misconceptions from the general public may hinder the application of gamification. As refer to Saleem et al. (2021), people may misinterpret the meaning of gamification since the word 'gamification' is associated with 'game', which is interesting but usually not associated with learning. Hence, educators and relevant stakeholders who do not possess sufficient background knowledge on gamification may be reluctant to use

gamification. It would be difficult to convince educators with a traditional mindset to try innovative teaching methods as they tend to rely on using traditional teaching and learning strategies which they are comfortable with (Daul, 2014; Jong et al., 2015).

(d)(iv) Teachers' information technology (IT) competency level

The IT competency level of teachers is proved to be another obstacle to implement gamification. Ross et al. (2005) explained that teachers who have a lower IT competency level are generally unconfident in using IT tools in the classroom and they would be hesitant to accept new teaching approaches, as they think the chance of technological failure is high. Culpin et al. (2015) further illustrated that it is common for teachers with higher seniority to refuse to use innovative teaching approaches as they are unfamiliar with information technology and they lack professional development related to e-learning.

2.3 Linkage between Personal Financial Education and gamification

A study conducted by Liew et al. (2018) revealed that it is possible to combine gamification with Financial Education, in particular for millennial students. The study proved that gamification facilitates students to comprehend financial concepts quickly in a pleasant and engaging learning environment. Also, gamification is effective in boosting students' interest and involvement in Financial Management courses, which may result in higher academic achievement. Rodrigues et al. (2018) stated that developed countries, such as the United States and Western European countries, have already employed gamification in Financial Education. However, there is a lack of research which studies the situation of using gamification to promote Personal Financial Education in Hong Kong.

3. Research Questions

The above literature review provides a general concept of Personal Financial Education and gamification. Notwithstanding, there is a lack of local research to explore the relationship between the two in the Hong Kong context. To fill this research gap, this study focuses on exploring the perception of teachers on gamification for promoting Personal Financial Education in Hong Kong secondary schools. Hence, three research questions are set as follows:

1. What is the current situation of promoting Personal Financial Education in Hong Kong secondary schools?
2. How do teachers perceive gamification and its linkage with Personal Financial Education?
3. What are the potential benefits, costs and challenges of applying gamification to promote Personal Financial Education?

4. Methodology

4.1 Research design and Data collection method

In this study, the qualitative research method was adopted for obtaining primary data and in-depth information from in-service teachers. As Gorman et al. (2005) asserted, qualitative research is an inductive approach which emphasizes the meaning behind the occurrence of events. The qualitative research approach facilitates the researcher to understand how Hong Kong secondary school teachers perceive gamification for promoting Personal Financial Education. Under the qualitative research approach, semi-structured interviews were conducted with the participants individually. To facilitate communication and ensure the accuracy of the response, the interviews were conducted in Cantonese. Due to the fifth wave of the COVID-19 outbreak in Hong Kong, all the interviews were conducted via Zoom. Since both the open-ended and theoretically driven questions were covered in the interviews (interview questions are attached in Appendix 1), participants contributed their idea under certain flexibilities while the discussions did not deviate from the focus of the research (Galletta & Project Muse, 2013). This ensures the qualitative data collected can demonstrate participants' experience with grounded theories and guarantees the trustworthiness of the research (Segal et al., 2006). Ultimately, the interview data help the researcher answer the above-mentioned research questions.

4.2 Sampling method

(a) Participants

The participants of this study are targeted at in-service secondary school teachers who are teaching *BAFS* or business-related subjects. This is because Business teachers are usually in

charge of promoting Personal Financial Education and they are much familiar with the syllabus and contents of Personal Financial Education in Hong Kong. Therefore, their views about the use of gamification for promoting Personal Financial Education are significant to this study.

(b) Sampling approach and Sample size

Participants of this research were selected by purposive and snowball sampling method with a targeted sample size of 20 to 25. As stated, the targeted participants are in-service Business teachers. Thus, the researcher selected some targeted participants through his connections with the Business teachers, including the teachers from his block practice (teaching practicum) school, graduates from The Education University of Hong Kong, as well as teachers who led their school students in a local online financial education championship. Considering the connection network is limited and targeted teachers have the right to refuse to participate in this study, the researcher also invited the initial participants to make referrals so as to invite more Business teachers to participate in this study. Unfortunately, due to the fifth wave of the COVID-19 outbreak in Hong Kong, classes were suspended and the announcement of the special ‘summer holiday’ created extra burdens and workload for teachers. As a result, many teachers refused to participate in this study. In the end, 10 teachers participated in the interviews, which is half of the targeted sample size.

(c) Background information of the participants

The 10 participants are all in-service secondary school *BAFS* or *Economics* teachers (detailed interviewees’ background information is attached in Appendix 2). Five of them are male and the rest are female. They are working in different schools (including Band 1, Band 2

and Band 3 schools) with different school cultures and characteristics. Also, the participants have a wide range of teaching experiences (ranging from the first year, around two to five years, and more than ten years of teaching). The diversity of the participants' backgrounds allows the researcher to collect more comprehensive data and guarantees the generalizability of this study.

4.3 Data analysis method

The qualitative data are analyzed under the data analysis process suggested by Creswell (2014). Before the data analysis, the raw data collected from the semi-structured interviews were transcribed from Cantonese to English transcripts under the approach of partial transcription. Then, all the data were read through for gaining the overall meaning and general ideas provided by different participants. Afterward, the coding process of all the data was initiated. After the coding process, different codes are labelled and categorized for identifying different themes regarding gamification for Personal Financial Education. This process facilitates the researcher to identify the interconnection of various categories and carry out the analysis of the themes found in the data. Finally, the identified themes provide the basics for the researcher to write up the findings and discussion of this study.

4.4 Trustworthiness of this study

Maintaining high trustworthiness is necessary for qualitative research as it represents the degree of confidence in data, interpretation, and procedures employed to assure the quality of research (as cited in Connelly, 2016). In this study, the entire process of data collection and data analysis is grounded in participants' sincere opinions and responses so as to ensure its trustworthiness.

5. Findings

5.1 The current situation of promoting Personal Financial Education in Hong Kong secondary schools (Interview Question 1)

According to the interview data, all the teachers expressed that Personal Financial Education has been promoted in their schools. Notwithstanding, as each school has its own policies and characteristics, the promotion situation is diversified among various schools.

(a) Promotion channels and Target groups

In general, the promotion channels can be classified into formal learning channels and informal learning channels. Depending on the choice of promotion channels and the extent of promotion, different schools have different target groups of students.

(a)(i) Formal learning channels targeted for BAFS students

Two teachers stated that their schools only employ formal learning channels to promote Personal Financial Education and the target group is limited to the senior form students who take the *BAFS* subject.

*“We rely on the **formal learning channel**, that is, the **BAFS subject**...Of course, the main target group is **all the BAFS students**.” (Teacher E)*

*“We only use the **formal learning channel** to deliver [Personal Financial Education]. **Only the BAFS students** can learn about it.” (Teacher G)*

(a)(ii) Formal and informal learning channels targeted for BAFS / Economics students

Some teachers stated that their schools utilize both formal and informal learning channels to promote Personal Financial Education. However, the target groups are limited to the senior

form students, typically those who take the Business-related subjects, including *BAFS* and *Economics*.

*“The current target group is **mainly for students who are studying BAFS.**” (Teacher C)*

*“Currently, our school only provides learning opportunities for **BAFS and Economics students** to learn about Personal Finance.” (Teacher F)*

*“For Personal Financial Education, we have both formal teaching and informal learning activities, but they are targeted **for S4-S6 BAFS students only.**” (Teacher H)*

*“The target groups would be limited to the senior students only. Undoubtedly, **students studying Business-related subjects would have a higher priority** in participating in those activities.” (Teacher I)*

(a)(iii) Formal and informal learning channels targeted to all students

On the other hand, some teachers mentioned that the target groups are not limited to senior form students. Junior form students also enjoy certain chances in learning Personal Finance via formal and/or informal learning channels.

*“Starting from the past few years, our school gradually **promote Personal Financial Education to the whole school.**” (Teacher A)*

*“**For junior form students**, they have three Business Fundamental classes per week, in which one of the units covers the contents of banking and Personal Finance.” (Teacher B)*

*“**Junior form students** mainly learn some financial management contents through the Life Education subject.” (Teacher D)*

*“**Junior form students** learn some Personal Finance knowledge via the L&S subject [Life and Society subject], as part of the syllabus talks about wise consumption.” (Teacher J)*

(a)(iv) Informal learning activities organized by external parties

In terms of informal learning channels, many teachers pointed out that their students participated in Personal Finance activities organized by external parties, such as competitions, talks, workshops and seminars (The official activity names are attached in Appendix 3).

“Our school has invited some scholars or representatives from different organizations to

give a **sharing on Personal Finance** during the morning assembly.” (Teacher A)

“Over the years, our students actively participate in **Personal Finance activities** organized by different institutions, including **competitions and talks**.” (Teacher B)

“Some of our students joined several **Personal Finance activities** organized by external institutions.” (Teacher C)

“In the past, our students participated in several **financial management workshops, talks and competitions**.” (Teacher D)

“We utilize the **OLE period** [Other Learning Experience period] to deliver some financial knowledge to our students. For example, we invited people from HKMA [Hong Kong Monetary Authority] to our school. They held several activities at the school hall, such as **seminars and drama performances**.” (Teacher J)

(a)(v) Specific informal learning activities organized by schools

Two teachers mentioned that their schools would organize some events by themselves as another kind of informal learning channel for students to learn about Personal Finance. However, these events are affected by COVID-19 and class suspensions.

“[In normal situation] **Our school would organize an annual event** called ‘營銷有道’. Teachers would invite students from different classes to set up game booths at the covered playground. Students are required to design some **booth games which are related to Personal Finance, career planning, financial planning, etc.**” (Teacher A)

“Normally, **we would organize some financial workshops** for students. We also want to provide more consolidative **learning opportunities outside the classroom**...but that’s not the case under the pandemic.” (Teacher I)

(b) Financial knowledge/concepts/topics delivered

(b)(i) BAFS syllabus

All teachers stated that their schools follow the BAFS syllabus to deliver the four major financial topics to BAFS students, which include ‘Time Value of Money’, ‘Consumer Credit’, ‘Personal Financial Planning and Investment’, and ‘Stock Trading as an Investment’.

(b)(ii) Non-BAFS syllabus

Nonetheless, as some schools promote Personal Financial Education to more target groups of students through various formal and informal learning channels, several interviewees expressed that the contents are not limited to the *BAFS* syllabus. Some common topics which are closely related to students' personal life, such as 'Saving', 'Money Management' and 'Smart Consumption', are delivered to students as well.

*"For example, students should **make good use of the pocket money**...they need to **learn this [how to manage their pocket money]**." (Teacher A)*

*"We hope students can develop their own **saving habit** and learn the importance of **savvy consumption**." (Teacher B)*

*"We talk about **the importance of saving** from theoretical and practical perspectives...the differences between needs and wants...how to keep the expenditure within the limits of revenues." (Teacher D)*

*"Students learn about **saving and money management**, such as the benefits of saving, the responsibilities and risk of borrowing." (Teacher H)*

*"Contents are mainly about **wise consumption, wealth management, saving** and so on." (Teacher J)*

(b)(iii) Cross-topics / Cross-subjects syllabus

Some teachers shared that they would try to deliver higher-level financial concepts to their students. Sometimes, they are delivered across different topics and subjects.

*"We also want to strengthen their [students'] knowledge on **household financial management and career planning**. They need to understand how to make planning for their future life as soon as possible. Ultimately, we want them to **establish proper financial attitudes and habits**." (Teacher B)*

*"Personal Finance is more or less related to **Civic Education** or **career planning**. Thus, we promote it across subjects." (Teacher J)*

(c) Teaching and Learning strategies applied

Depending on the choice of promotion channels and the extent of promotion, the teaching and learning strategies applied are varied among different schools.

(c)(i) Direct teaching

In formal learning channels, direct teaching is dominated. Many teachers stated that they teach the Personal Finance topics directly with a supplement of PowerPoint, videos, real-life examples, e-learning tools and online resources during the lesson time.

*“I adopt **direct teaching** with the help of PowerPoint and videos. Indeed, there are lots of videos related to Personal Finance available online.” (Teacher E)*

*“**Direct teaching** is the major strategy for teaching Personal Finance...will use E-learning tools and online resources as supplements.” (Teacher F)*

*“I use **direct teaching**...supplemented by videos and real-life examples.” (Teacher G)*

*“Most of the time I will use **direct teaching**...short videos and PowerPoint.” (Teacher H)*

(c)(ii) Other teaching and learning strategies

Some teachers mentioned that they have applied other teaching and learning strategies, such as game-based learning, simulations, in-class discussions and inquiring learning.

*“I think the most obvious strategy should be **game-based learning**...The booth games **simulated real-life scenarios**.” (Teacher A)*

*“We apply **interactive and situated teaching**.” (Teacher B)*

*“I would **show some real-life examples**, such as bank statements and advertisements with students...I would **let students collect information on the Internet**, and then they will have **discussions and sharing in class**.” (Teacher C)*

*“Students can apply the financial knowledge in some **case studies**...[they] would take a leading role...This approach would be similar to the **inquiring learning** that our school always emphasizes.” (Teacher I)*

(d) Effectiveness and Limitations of the current promotion channels

Teachers held different opinions about the effectiveness of the current promotion channels in their schools. A few of them stated that the effectiveness is acceptable, as evidenced by the active participation and positive feedback from their students.

*“Students **actively participated in the event**...[Many of] them expressed that **this event should continue next year**.” (Teacher A)*

*“I believe **students have mastered the basic knowledge of Personal Finance and they were actively involved in the activities**.” (Teacher B)*

*“The effect is fair and acceptable. I think **informal learning channels can boost students’ engagement and interests** [in learning Personal Finance].” (Teacher C)*

*“Overall, **the result is quite good** because **students always participating in our activities proactively**.” (Teacher I)*

However, more teachers expressed that the effectiveness is fair only due to various limitations of the current promotion channels.

(d)(i) Insufficient teaching hours

Several teachers expressed that insufficient teaching hours is a significant factor which affects them to deliver Personal Financial Education to students via the formal lessons.

*“**The teaching hours are very limited**. We can’t spend too much time on teaching Personal Finance.” (Teacher F)*

*“**Time is really insufficient**...It very difficult for us to go into details.” (Teacher H)*

*“One of the major problems is **insufficient teaching hours**.” (Teacher J)*

(d)(ii) Narrow scope of promotion

Some teachers stated that the scope of promotion in their schools is narrow because of the exam-oriented mindset, limited promotional channels and insignificant contents of Personal

Financial Education in schools. Hence, contents were briefly delivered and not every student could enjoy the chance to learn about Personal Finance.

*“I think **the contents are quite superficial**, as they are mainly focusing on the HKDSE [BAFS] syllabus.” (Teacher C)*

*“Our promotion channels are targeted for BAFS and Economics students only. Other students do not enjoy the opportunities [in learning Personal Finance]...**We don’t have suitable channels to promote it to them.**” (Teacher F)*

*“Currently, we don’t have any Business-related subjects for junior forms. **We cannot promote it [Personal Financial Education] to junior secondary students.**” (Teacher G)*

*“There is **a lack of promotion channels**. We cannot promote it [Personal Financial Education] to the whole school.” (Teacher H)*

*“Compare with accounting, **the [Personal Finance] contents only account for very small proportions**. Students may not pay attention to the importance of Personal Financial Education...**it is not the main assessment area in their exams.**” (Teacher J)*

(d)(iii) Insufficient background knowledge of students

A number of teachers claimed that the background knowledge of students on Personal Finance is inadequate, which reduces the effectiveness of the promotion.

*“In the past, we tried to teach Form 1 students about the topics of financial management, interest rate and banking services. However, teachers expressed that **the contents were too difficult**, as they were **far away from students’ daily experience.**” (Teacher B)*

*“Students are not very interested in learning [Personal Finance] as they think it is **far away from their daily life**, such as investing in different financial products, buying insurance, or using credit cards and borrowing, etc.” (Teacher C)*

*“In general, students are weak in mastering the financial management concepts. For example, **many students do not know what the purpose of saving is.**” (Teacher D)*

*“I think it is difficult for a Form 4 student to understand and master those concepts. This is because students have not yet reached the stage of managing their wealth. **Some students don’t even have a saving habit at all. Thus, their background knowledge is very weak.**” (Teacher E)*

(d)(iv) Effects of COVID-19

Two teachers mentioned that COVID-19 hinders the promotion of Personal Financial Education, as all face-to-face activities were canceled.

“Because of the pandemic, we cannot arrange face-to-face activities for students. I think it would be better for students to gain some authentic learning experiences. For example, if we can arrange a visit to a bank, the staff could directly explain to students about the services and products provided by the bank.” (Teacher E)

“In such a harsh situation [class suspension], it is impossible to organize face-to-face activities. Yet, it is much difficult for us to promote it [Personal Financial Education] online.” (Teacher I)

5.2 Teachers’ perception of gamification (Interview Question 2)

The interview data demonstrate the understanding of gamification among teachers.

(a) Definition of gamification

In general, teachers defined gamification as ‘learning through (playing) games’ and it is an integration between gaming and learning. They highlighted some important features of gamification, such as containing educational elements in games, learning in a relaxing way as well as attracting students to learn.

“‘Learning through games’ ...to integrate teaching contents with a game.” (Teacher A)

“Under gamification, a topic is presented to the students through games.” (Teacher B)

“Gamification is an integration of learning and playing games.” (Teacher C)

“The core value of gamification is ‘learning’ rather than simply ‘playing’”. (Teacher D)

“Gamification means we add educational elements into a game.” (Teacher E)

“Gamification allows players to achieve the predetermined learning objectives through playing games.” (Teacher F)

“‘Learning in a relaxing way’ ...It should be well received by students.” (Teacher G)

“Gamification applies game-design elements and principles in non-game contexts [academic field].” (Teacher H)

*“Gamification means **teachers use games as a tool to teach students.**” (Teacher I)*

*“Gamification **incorporates learning components into the games.**” (Teacher J)*

(b) Opinions about the trend of playing electronic games among teenagers

Teachers held different views towards the trend of playing electronic games among teenagers. Many of them agreed that it is acceptable for teenagers to play electronic games. Some stated that playing electronic games allows students to make more friends and get relaxed.

*“Personally, **I am in favor of playing electronic games.** Due to the pandemic, people always need to stay at home. In fact, **electronic games become a way of socializing.** They provide an opportunity for teenagers to build up friendships with others.” (Teacher A)*

*“**Most teenagers have the habit of playing electronic games.** Playing electronic games properly can **let them get relaxed and relieve stress.**” (Teacher C)*

*“I think it is **a common phenomenon for teenagers to play electronic games.** In fact, children may start playing electronic games at primary school age.” (Teacher E)*

*“As long as teenagers **don’t get addicted, I support them to play.**” (Teacher F)*

*“I think **it is a common trend.** As long as students are **not negatively affected by the games, it would be fine.**” (Teacher I)*

*“**It’s very common nowadays,** you can’t stop them [teenagers] playing electronic games... and I believe it is **a way for relaxation.**” (Teacher J)*

Nonetheless, some teachers expressed their concerns about the trend of playing electronic games among teenagers.

*“It seems that **teenagers are spending more and more time on playing electronic games.**” (Teacher B)*

*“If teenagers are **indulged in playing electronic games,** they are **wasting their time,** and this may **affect their studies and the relationship with their family.**” (Teacher C)*

*“Due to the popularity of smartphones, students are inevitably exposed to electronic games, and **the cases of getting addicted to electronic games will keep raising.**” (Teacher D)*

*“Some **students play electronic games during online classes...**I believe **the time they spend on games is even longer than the time they spend on studying.**” (Teacher E)*

(c) Similarities and Differences between gamification and electronic games

Teachers have identified the similarities and differences between gamification and electronic games.

(c)(i) Similarities

As for the similarities, some teachers pointed out that both gamification and electronic games involve ‘the action of playing games’ and the common element is ‘fun’.

*“Both of them are in the form of **playing games** and players are expected to **have fun**.”*
(Teacher A)

*“Both of them are **interesting and competitive**, so players can **have fun**.”* (Teacher D)

*“I think both of them involve **the action of playing electronic games**.”* (Teacher E)

*“Both of them aim to **attract players with game elements**.”* (Teacher F)

*“Both of them involve digital and virtual elements for **creating fun**.”* (Teacher H)

*“I think both of them are **diverse and interesting**.”* (Teacher J)

(c)(ii) Differences

As for the differences, teachers indicated that gamification is designed for educational purposes while electronic games focus on entertaining purposes.

*“**Gamification** is ultimately to let students learn something...**electronic games** may just for relaxation.”* (Teacher A)

*“For gamification, students need to utilize their knowledge and high-order thinking skills to make judgements and decisions. On the contrary, **playing electronic games** is like a streamlined production process.”* (Teacher B)

*“**Electronic games** are mainly for entertainment, while gamification consists of educational elements.”* (Teacher C)

*“I think **gamification** focuses on delivering theories and knowledge, which is a kind of practical learning experience. **Electronic games** are leisure activities only.”* (Teacher E)

*“**Gamification** allows students to learn in a leisure way. **Electronic games** are games only, we won’t expect players to learn specific knowledge from them.”* (Teacher I)

5.3 Teachers' perception of the linkage between Personal Financial Education and gamification (Interview Question 3)

The interview data demonstrate how teachers interpret Personal Financial Education and its linkage with gamification.

(a) Definition of Personal Financial Education

Teachers defined Personal Financial Education as a medium of transferring knowledge and practical skills, as well as assisting students to cultivate proper financial attitudes and habits.

(a)(i) Knowledge and Practical skills

Most of the teachers considered Personal Financial Education as a medium of transferring fundamental financial knowledge and practical skills to students.

*“Personal Financial Education is **very practical**. We learn how to conduct financial planning, manage our wealth and achieve financial independence.” (Teacher A)*

*“Personal Financial Education is **life-oriented**. We learn how to conduct financial planning in different life stages properly so as to fulfill our daily life needs.” (Teacher B)*

*“We learn **practical financial management skills**.” (Teacher C)*

*“**Essential financial management skills are covered**, such as financial planning, purchasing insurance, making investments and credit management.” (Teacher E)*

*“Learners learn how to **manage their wealth properly**.” (Teacher F)*

*“Teaching students about **financial management knowledge**.” (Teacher G)*

*“A process intended to **strengthen one's financial knowledge**.” (Teacher H)*

*“Personal Financial Education **teaches students practical skills**. They learn how to manage their personal wealth and how to use different financial products.” (Teacher I)*

*“Personal Financial Education covers **the essential financial knowledge that comes across in our daily life**.” (Teacher J)*

(a)(ii) Attitudes and Habits

Some teachers believed that Personal Financial Education assists students to cultivate proper financial attitudes and habits.

*“It [Personal Financial Education] helps people establish a **prudent financial management attitude** and develop **healthy financial management habits**.” (Teacher C)*

*“In a macro view, Personal Financial Education is **the cultivation of ‘financial literacy’**... building up a proper mindset is not easy...that’s the core value [of Personal Financial Education].” (Teacher D)*

*“Stepping further, Personal Financial Education encourages learners to **develop healthy financial habits**.” (Teacher H)*

(b) Linkage between Personal Financial Education and gamification

In general, most of the teachers felt positive about the relationship between Personal Financial Education and gamification, and they perceived that gamification is applicable for promoting Personal Financial Education.

*“In recent years, there are more games available which involve Personal Finance components...I believe **the effect [of using gamification] should be good**.” (Teacher A)*

*“Students can apply financial concepts in different scenarios, which should be **much more impressive** than simply learning through textbooks.” (Teacher B)*

*“Promoting Personal Financial Education through electronic games is a way to **motivate teenagers to learn**.” (Teacher C)*

*“Gamification **facilitates students to ‘learn by doing’ and ‘learn by using’**.” (Teacher D)*

*“Teachers can employ gamification to **review the whole syllabus** of Personal Financial Education with students and help them to **achieve the learning objectives**.” (Teacher F)*

*“Financial management involves a lot of practical operations. If financial education is gamified, we can **let students experience real-life financial operations in a virtual form**.” (Teacher G)*

*“It is so common in the foreign countries that they use games as a media to transfer the financial knowledge to students, like ‘Everfi’ and ‘PWC’. **I believe they [Personal Financial Education and Gamification] can work well with each other**.” (Teacher I)*

5.4 The potential benefits, costs and challenges of applying gamification to promote

Personal Financial Education (Interview Question 4)

As refer to the interview data, teachers listed a number of potential benefits, costs and challenges of applying gamification to promote Personal Financial Education.

(a) Potential benefits to students

Teachers expressed that using gamification to promote Personal Financial Education would be advantageous to students in view of learning motivation and engagement, learning achievement, as well as learning opportunities.

(a)(i) Enhancement in learning motivation and engagement

All teachers agreed that the use of gamification in Personal Financial Education can enhance students' learning motivation and engagement.

*“Gamification should be very **attractive to students** as it is rarely applied in traditional lessons. Students would be **more motivated and get involved in the lesson.**” (Teacher A)*

*“Gamification can **boost students’ interest**...they won’t learn passively.” (Teacher B)*

*“Gamification is a **positive reinforcement**. Students will have **a sense of satisfaction** when they get high scores in the game and this will **motivate them to learn.**” (Teacher C)*

*“Gamification is **a form of ‘soft penetration’**. Students are more likely to accept this learning method, which can **boost their learning motivation.**” (Teacher D)*

*“It [Gamification] allows students to be **more engaged in the lessons.**” (Teacher E)*

*“Gamification **gets rid of the drawbacks of direct teaching [boredom].**” (Teacher F)*

*“Gamification **provides a sense of novelty and motivates students to learn.**” (Teacher G)*

*“Gamification **creates an interesting way** for students to study Personal Finance. Game elements **definitely foster them to learn.**” (Teacher H)*

*“With the help of gamification, students can **learn financial knowledge at a leisure way.** This can **reduce their ‘hard feelings’ towards learning.**” (Teacher I)*

*“If the game is well designed, students would be **motivated to learn.**” (Teacher J)*

(a)(ii) Enhancement in learning achievements

Some teachers pointed out that the use of gamification to promote Personal Financial Education can enhance students' learning achievements.

*"I expect **the game would provide different scenarios** in which the Personal Finance concepts are subtly introduced to students. I think this can **strengthen the memory of students**."* (Teacher B)

*"I believe **gamification is a kind of experiential learning**. Through playing the game, students have more opportunities to **apply what they have learnt before**. Eventually, they would have **a strong memory over the topics** [of Personal Finance]."* (Teacher D)

*"Gamification allows students to learn something new while they can answer questions and **consolidate what they have learnt before** as well."* (Teacher E)

*"In terms of reinforcement, I think gamification can **deepen students' understanding of the subject matter** [Personal Finance]. This is because students need to **synthesize what they have learnt before and apply the knowledge in the game**."* (Teacher H)

(a)(iii) Provision of more learning opportunities for non-Business students

One teacher expressed that gamification provides more learning opportunities for non-Business students to learn Personal Finance.

*"Personal Financial Education can be universal. I think gamification **provides more learning opportunities for different students** to learn Personal Finance. **Students who are not studying Business-related subjects can also play the games and learn the related knowledge**."* (Teacher I)

(b) Potential benefits to teachers

Teachers also stated that applying gamification to promote Personal Financial Education would be beneficial to themselves in terms of teaching effectiveness, enrichment in pedagogies and teaching activities, and satisfaction with teaching.

(b)(i) Enhancement in teaching effectiveness

A number of teachers expressed that their teaching effectiveness can be strengthened with the help of gamification. This is because students can acquire some basic knowledge from the game first, and then teachers can supplement the contents afterward.

“We can let students play the game first. The [game] results may provide useful information for us to adjust our teaching and lesson design. We can deliver appropriate contents to students in the following lessons...our teaching will be much more effective as the expectation discrepancy between teachers and students is reduced.” (Teacher B)

“I assume our teaching effectiveness can be enhanced if we apply gamification properly in teaching Personal Finance. Teachers can let students play the game first. After the game, teachers use theoretical explanations to further illustrate the concepts and help students consolidate what they learnt from the game.” (Teacher D)

“By using gamification, I believe it is much easier for us to explain some abstract financial concepts to students. This is because the concepts are visualized in the game, so students can gain some basic understanding by themselves. After the game, we can supplement the contents quickly...teaching effectiveness can be boosted.” (Teacher G)

“I think gamification helps students assimilate the knowledge quickly. This not only be conducive to students, but teachers also benefit from it. During the gaming time, teachers can spend more time observing students. We can provide instant feedback to students and makes the whole teaching and learning process much more effective.” (Teacher I)

(b)(ii) Enrichment in pedagogies and teaching activities

Several teachers stated that adopting gamification is a possible way for them to explore more suitable pedagogies and enrich their teaching activities.

“The use of gamification would be a good attempt for teachers to explore new teaching strategies. I believe mastering more teaching methods is essential nowadays, as we need to adapt to the changing teaching environment, or we have to take care of students with different learning needs.” (Teacher A)

“If we use gamification to teach Personal Finance, we can enrich our teaching activities. For instance, we can let students make some simulated investment and financial decisions in the game, which are difficult to do so in regular lessons.” (Teacher C)

*“I think **gamification is an attractive teaching strategy for Business subjects**. I do hope that students can gain different learning experiences throughout the three years of studying BAFS. To be honest, it is challenging to design interesting activities in accounting lessons. Yet, Personal Financial Education is another case. **Using gamification to promote it is worth further exploration and experiment.**” (Teacher H)*

(c)(iii) Enhancement in teaching satisfaction

Two of the teachers shared that it would be possible for them to gain a higher sense of satisfaction with their own teaching with the help of gamification.

*“When you see students are actively participating in your lessons, you will definitely **feel happy and satisfied.**” (Teacher A)*

*“It also **provides a sense of satisfaction for teachers**, typically when you know your students are very enjoyed in learning personal finance through the game.” (Teacher C)*

(b) Potential costs and challenges

In spite of the potential benefits, teachers listed a number of potential costs and challenges of applying gamification to promote Personal Financial Education.

(b)(i) Time constraints and time costs

Many teachers coincidentally believed that applying gamification to promote Personal Financial Education would be a prolonged process, which may cost a lot of time to accomplish. They expressed their concerns explicitly about using gamification, such as insufficient teaching time, as well as extra time spent on preparation and follow-up tasks.

*“Teachers may need to **spend a lot of time to adapt to it [gamification].**” (Teacher A)*

*“Due to the jam-packed curriculum, **teaching hours are very insufficient.**” (Teacher B)*

*“Teachers may need to **spend extra time for gamification**, including preparation, designing games, leading the activities, and conducting debriefing sessions.” (Teacher C)*

“How to make room for promoting Personal Financial Education via gamification within

the tight teaching schedule is a doubt.” (Teacher D)

“We must consider the time we spend on preparation and follow-up tasks.” (Teacher F)

“Designing a game takes tremendous time. It may take several months or years to launch a fine-tuned game for students.” (Teacher G)

*“To make sure students can achieve the expected learning outcomes, **teachers may need to spend extra time guiding students.** If students fail to achieve the expected learning outcomes, teachers **may need to spend time to teach the contents again.**”* (Teacher H)

*“**Having not enough teaching time is an obstacle.** Due to the impact of the pandemic, we are working very hard to catch up with the schedule...online teaching further affects our teaching...**it is really challenging for us to spend time for gamification.**”* (Teacher I)

(b)(ii) Monetary costs

A few teachers expressed that a considerable amount of money would be spent on using gamification to promote Personal Financial Education. The school authorities may not be willing to devote so many resources to do so.

*“If you promote Personal Finance in a gamified way, it must involve **the cost of purchasing the games.**”* (Teacher A)

*“**Purchasing relevant games and services from other parties involve a lot of costs.** It depends on whether the school has sufficient financial resources to do so.”* (Teacher B)

*“I think **the monetary costs will certainly be high.** This is because the school needs to **hire someone to design the game and the potential costs will increase over time.** We may keep spending money to **maintain and upgrade the game.**”* (Teacher E)

(b)(iii) Students’ characteristics

A number of teachers mentioned that the characteristics of students may affect the implementation of gamification to promote Personal Financial Education. These include the abilities, attitude and learning needs of students.

*“How to maintain the learning motivation after the game and develop an interest to explore the topics on their own **certainly depend on students themselves.**”* (Teacher C)

*“I am afraid gamification **may not be able to cater for the learning diversities**...especially*

for the SEN [Special Educational Needs] students.” (Teacher G)

*“I think gamification is **only effective for self-discipline students**. Some may fail to achieve the expected learning outcomes.” (Teacher H)*

*“I think **the attitude of students greatly influences the outcome**. If students don’t take it seriously, the learning outcome will be minimal or fail.” (Teacher I)*

(b)(iv) Teachers’ information technology (IT) competency level

A teacher stated that teachers’ IT competency level is another possible challenge for promoting Personal Financial Education through gamification.

*“**Some teachers are unfamiliar with the use of electronic and IT products**, not to mention the use of gamification in their teaching. As they don’t know how to use it at all, **they may refuse to use it**.” (Teacher A)*

(b)(v) Absence of hardware

Two teachers expressed their concerns about the lack of hardware for gamification.

*“If you want to play an electronic game during the lesson, you **need to make sure every student has a suitable electronic device**.” (Teacher A)*

*“I think **how to guarantee every student gets an electronic device is a big concern** for gamification....Students from grassroots families may not afford to buy an iPad or a laptop. I think this is unfair to them.” (Teacher H)*

(b)(vi) Concerns from parents (Misconceptions)

One teacher pointed out that some parents may be very concerned about the trend of playing electronic games among teenagers. This may cause another barrier to use gamification to promote Personal Financial Education.

*“**Some parents may oppose [gamification]** because they may uphold **a traditional belief of ‘playing electronic games affects learning’**. Some parents may not be able to distinguish the differences between gamification and electronic games. They may feel worried and they may even complain to the school and the teachers.” (Teacher A)*

6. Discussion

6.1 The current situation of promoting Personal Financial Education in Hong Kong secondary schools (Research Question 1)

The findings show that Personal Financial Education has been promoted in Hong Kong secondary schools based on the school-based curriculum. Since each school has its own policies and culture, the situation is diversified among various schools. In general, the promotion is limited to a relatively small extent and some constraints reduce the effectiveness of the promotion.

(a) Promotion channels

➤ Formal learning channels play a dominant role

The findings reveal that Hong Kong secondary schools put more emphasis on formal learning channels than informal learning channels in terms of promoting Personal Financial Education. Teachers mentioned that formal learning channels are the most prominent way of promoting Personal Financial Education. They shared that Personal Finance is promoted in the senior form *BAFS* lessons, as Personal Finance is included in the *BAFS* syllabus. Some schools also promote Personal Finance in the junior form *Business Fundamental* lessons or *Life and Society* lessons. These practices align with the education policies and curriculum guide on Personal Financial Education announced by the Education Bureau (Education Bureau, 2007, 2010).

➤ Informal learning channels play a supplementary role

On the other hand, teachers stated that some informal learning channels are employed for

promoting Personal Financial Education. Nonetheless, these informal learning channels are supplementary only. Some teachers mentioned that their students participated in Personal Finance events such as competitions, workshops, and seminars that were arranged by third parties. Some even stated that their schools would organize some Personal Finance activities by themselves. These examples of informal learning channels correspond to the findings in Kwok (2020)'s study.

(b) Target groups

- *Students who study Business-related subjects enjoy more learning opportunities*

As formal learning channels play a dominant role in the promotion of Personal Financial Education, the target groups are limited to particular students. In general, senior form students who study Business-related subjects, such as *BAFS* and *Economics*, enjoy more opportunities in learning Personal Finance. In some cases, Personal Financial Education has been promoted to junior form students or even the whole school. Teachers expressed that this phenomenon is one of the factors which hinder the effectiveness of the current promotion.

(c) Financial knowledge/concepts/topics delivered

- *More schools focus on the BAFS syllabus*
- *Some schools also adopt non-BAFS syllabus or cross-topics / cross-subjects syllabus*

Once again, as most of the schools promote Personal Financial Education via formal learning channels and particularly in the *BAFS* subject, teachers expressed that they usually teach the four core financial topics in accordance with the *BAFS* syllabus. Nevertheless, some teachers mentioned that they also teach other financial topics that are strongly tied to students'

daily lives. A small proportion of teachers even claimed that their schools promote Personal Financial Education across different topics and subjects, such as Civic Education and career planning. These support the findings in HKCSS's (2016) study, which pointed out that the policy of 'school-based curriculum' facilitates secondary schools to promote Personal Financial Education flexibly.

(d) Teaching and Learning strategies applied

- *Novice teachers tend to use direct teaching in formal lessons*
- *Experienced teachers tend to apply more teaching and learning strategies*

There are some common teaching and learning strategies applied by the teachers in promoting Personal Financial Education. On the one hand, a number of teachers expressed that they tend to use direct teaching to deliver Personal Finance topics in formal lessons with PowerPoints, videos and other resources. On the other hand, some teachers stated that they have applied other kinds of teaching and learning strategies in teaching Personal Finance. For instance, they used game-based learning, case studies and inquiring learning. Interestingly, teachers who stated that they used direct teaching are mostly novice teachers while teachers who stated that they used other kinds of teaching and learning strategies are mostly experienced teachers.

(e) Effectiveness and Limitations of the current promotion channels

(e)(i) Effectiveness

- *Fair and acceptable*

In general, teachers believed that the effectiveness of the current promotion channels of

Personal Financial Education in their schools is fair and acceptable. They explained that students generally demonstrate their active engagement in the activities and they received positive feedback from students, in particular in the informal learning channels.

(e)(ii) Limitations

- *Insufficient teaching hours*
- *Narrow scope of promotion*
- *Insufficient background knowledge of students*
- *Effects of COVID-19*

Even though the effectiveness of the current promotion channels is fair and acceptable, teachers stated that a number of limitations hinder the promotion of Personal Financial Education. Similar to the argument of IEC (2015) and HKCSS (2016), teachers pointed out that insufficient teaching hours is a critical problem that prohibits them to promote Personal Financial Education to students in great detail. Coincidentally, Personal Financial Education is a non-compulsory subject in Hong Kong. This further discourages schools and teachers to promote Personal Financial Education extensively. As a result, the scope of promotion is narrow and the contents delivered are more or less superficial. Worse still, teachers mentioned that students' background knowledge of Personal Finance is limited. Together with the negative effects of COVID-19, the promotion of Personal Financial Education in schools becomes much more challenging.

6.2 Teachers' perception of gamification and its linkage with Personal Financial Education (Research Question 2)

The findings demonstrate that teachers generally gain a comprehensive understanding of the concept of gamification, and they are very clear about the meaning and purposes of Personal Financial Education. Teachers agreed that the promotion of Personal Financial Education can be attached to gamification.

(a) Definition and perception of gamification

- *Learning through (playing) games; An integration between gaming and learning*
- *Fun and interesting*
- *Education-oriented; Different from electronic games*

Teachers precisely defined gamification and they perceived gamification as a teaching approach that integrates gaming and learning, which allows students to learn while playing electronic games. They also pointed out gamification employs the features of electronic games and thus turning the learning process into a much more interesting and attractive level. This explanation is similar to Kapp (2012) who stated that gamification utilizes game-based elements to encourage people to learn. Besides, teachers also distinguished the differences between gamification and electronic games. They stressed that gamification focuses on educational purposes, which differentiates itself from electronic games with the purpose of providing entertainment to players. This interpretation echoes Kim et al. (2018) who suggested that gamification is the application of systematic procedures with game elements that encourage players to learn and address problems so as to achieve some learning objectives.

(b) Definition and perception of Personal Financial Education

➤ *Knowledge and practical skills*

➤ *Attitudes and habits*

As all the interviewees are Business teachers, they demonstrated their professional understanding of Personal Financial Education. Teachers agreed that Personal Financial Education is not simply a delivery of theories and textbook knowledge to students. On the contrary, Personal Financial Education is comprehensive and practical. In general, teachers believed that Personal Financial Education has two core values, one is delivering financial knowledge and practical skills to students, and the other one is helping students cultivate proper financial attitudes and habits. This finding corresponds to OECD (2005), which articulated that Financial Education is a comprehensive subject matter for enhancing one's perception of financial knowledge and helping oneself develop appropriate skills and confidence in making informed financial decisions and ultimately achieve financial well-being.

➤ *Benefits are beyond the individual level*

Through defining Personal Financial Education, teachers also highlighted the importance and benefits of Personal Financial Education. They pointed out that acquiring financial knowledge and practical skills as well as building up positive financial attitudes and habits not only benefits students themselves. Enrichment in one's financial literacy may positively affect his/her family and friends and contribute to the development of our society. Their perception is accordance with the views in the above literature (Atkinson & Messy, 2012; HKCSS, 2016; IFEC, 2019; Kwok, 2020).

(c) Linkage between Personal Financial Education and gamification

- *Positive relationship*
- *Gamification is applicable for promoting Personal Financial Education*

Even though it is not particularly common for Hong Kong secondary schools to adopt gamification, adding that currently Personal Financial Education is not promoted comprehensively, teachers still assumed there is a positive relationship between Personal Financial Education and gamification. As refer to the findings, teachers expressed that it is a prevailing trend for teenagers to play electronic games nowadays. Some teachers compared gamification with traditional teaching methods. Since gamification takes the advantages of electronic games by adding amusing game elements into an educational setting, teachers strongly believed that gamification will be much more attractive for students to learn about Personal Finance. They also mentioned that gamification allows students to apply their financial knowledge and skills via different virtual scenarios. For example, students can make investments, purchase insurance or buy properties in the game. These compensate for the lack of real-life experience and opportunities for students to perform financial decisions and judgements at their ages. Teachers perceived that gamification is applicable for promoting Personal Financial Education and they shared a similar view with Liew et al. (2018)' study.

6.3 The potential benefits, costs and challenges of applying gamification to promote Personal Financial Education (Research Question 3)

The findings illustrate that teachers could identify and analyze the potential benefits, costs and challenges of applying gamification to promote Personal Financial Education. Their perceptions align with the analysis in the above-mentioned literature.

(a) Potential benefits

Teachers expressed that the use of gamification to promote Personal Financial Education ought to be beneficial to both students and teachers.

(a)(i) Potential benefits to students

➤ *Enhancement in learning motivation and engagement*

Teachers agreed that using gamification can enhance students' learning motivation and engagement in learning Personal Finance. It has been revealed that students' learning motivation and engagement always play a crucial role in teaching and learning. As evidenced by the findings, teachers expressed that many students do not possess adequate background knowledge on Personal Finance, and they only enjoy limited opportunities to perform financial decisions and judgements in daily life. At the same time, some students do not draw attention to their financial literacy as Personal Financial Education is not mandatory in Hong Kong. Thence, teachers stressed that it is quite challenging for them to arouse students' interest and motivate them to learn Personal Finance. Some teachers also indicated the limitations of their traditional teaching pedagogies and they stated that students are usually not motivated in lessons, especially during direct teaching. Fortunately, teachers pointed out that gamification should be attractive to students and allow students to learn Personal Finance in a relaxing, active and entertaining way. They strongly believed that using gamification to promote Personal Financial Education can boost students' learning motivation and engagement, which matches with the findings in previous research on gamification (Apostol et al., 2013; Kiryakova et al., 2014; Mohamad et al., 2018).

➤ *Enhancement in learning achievements*

Teachers also agreed that using gamification can enhance students' learning achievements in Personal Finance. Teachers mentioned that some financial concepts are somewhat abstract for students to master. Meanwhile, limited teaching time and narrow scope of promotion restrain students to learn Personal Finance in-depth and they do not have enough opportunities to turn theory into practice. Consequently, students may not be able to achieve satisfying learning achievements. Teachers assumed that utilizing gamification is a possible solution to the problems. They explained that gamification would function as a positive reinforcement for students to consolidate their learning and strengthen their memories with the help of different scenarios in the game. Similar to the justification by other scholars, students' learning achievements are expected to be improved with the help of gamification (Domínguez et al., 2013; Liew et al., 2018; Zainuddin et al., 2020).

➤ *Provision of more learning opportunities*

A teacher suggested that the adoption of gamification is favorable for providing more learning opportunities for students to study Personal Finance. As mentioned by many teachers, the current promotion channels are generally targeted for students who take Business-related subjects. Indeed, the above literature review and findings show that Personal Financial Education is generic and it is essential for every individual to strengthen his/her financial literacy. The current promotion situation is not fair to students who do not take Business-related subjects. With the help of gamification, both Business and non-Business students can play the games and acquire some fundamental financial knowledge.

(a)(ii) Potential benefits to teachers

➤ *Enhancement in teaching effectiveness*

Teachers stated that applying gamification to promote Personal Financial Education would enhance their teaching effectiveness. As refer to the findings, some teachers declared that the present teaching is not very effective, since there is an expectation discrepancy between students and teachers. It is common for teachers to misestimate students' performance in learning Personal Finance. Sometimes, students may fail to achieve the predetermined learning outcomes as they are not interested in the topics, or they have encountered difficulties in understanding the financial concepts. Fortunately, teachers perceived that gamification would facilitate students to learn Personal Finance more easily. Teachers can adjust their teaching and lesson design which match students' abilities and characteristics. At the same time, teachers enjoy more spaces to provide instant feedback to students. As a result, the teaching effectiveness can be boosted. This potential benefit is in line with the findings of the previous studies (Kiryakova et al., 2014; Landers et al., 2015; Kim et al., 2018).

➤ *Enrichment in pedagogies and teaching activities*

Teachers explained that using gamification allows them to explore more suitable pedagogies and enriches their teaching activities in delivering Personal Financial Education. They emphasized that the teaching and learning environment is ever-changing and it is necessary for teachers to master more pedagogies and create more diversified teaching activities in class. Teachers shared a similar idea with Saleem et al. (2021) and they agreed that gamification gradually become an important and influential teaching approach in the 21st century. Teachers' opinions also agreed with Landers et al. (2015)'s argument, in which

teachers are not fully replaced by gamification but they still play an indispensable role to guide students to learn progressively and supplement the gamified activities with suitable pedagogies.

➤ *Enhancement in teaching satisfaction*

Some teachers shared that it would be possible for them to gain a higher sense of satisfaction in teaching owing to the potential benefits of gamification to students and teachers. They expressed that they would be glad to see students learn actively in class and they are motivated to achieve the learning objectives. These provide a strong driving force for teachers to further refine their teaching and ultimately turn the whole teaching and learning process into a much more satisfying level.

(b) Potential costs and challenges

Despite the fact that the use of gamification to promote Personal Financial Education would contribute some potential benefits, teachers stressed their concerns over the potential costs and challenges as well.

➤ *Time constraints and time costs*

Teachers claimed that time constraints and time costs would be the major costs and challenges of using gamification to promote Personal Financial Education. They pointed out that the Hong Kong education system is exam-oriented and the teaching schedule is always jam-packed. Since Personal Financial Education is not mandatory in Hong Kong, school authorities and teachers may not be willing to spend more time promoting Personal Financial Education. Worse still, the idea of gamification is still relatively new to the local education

field and teachers may be inexperienced in using it. If the promotion of Personal Financial Education involves gamification, teachers argued that they need to devote more time to get used to this new approach and many other time costs will be aroused as well, such as extra time for preparation, implementation and follow-up tasks. Certainly, teachers shared a similar view with previous studies (Mumtaz, 2000; Bada & Olusegun, 2015; Saleem et al., 2021).

➤ *Monetary costs*

Teachers also stated that monetary costs are expected to be noticeable in the case of applying gamification to promote Personal Financial Education. In general, schools need to spend a considerable amount of money to purchase, maintain, upgrade or even replace the game in order to provide an optimal gamified learning experience for their students. Teachers argued that it is not cost-effective and school authorities may not be willing to devote so many financial resources to employ gamification to promote Personal Financial Education.

➤ *Students' characteristics*

Teachers mentioned that students' characteristics may cause challenges in using gamification to promote Personal Financial Education. They explained that the abilities, attitudes and learning needs of students are diverse and gamification may not be a one-size-fits-all approach. For instance, some students may not be interested in playing electronic games. Moreover, teachers are worried that students who are weak in self-discipline or students with special educational needs (SEN) may fail to achieve the expected learning outcomes as they may treat gamification as a leisure game only. This finding echoes Ružić and Dumančić (2015)'s argument that the effectiveness of gamification is affected by students' characteristics.

➤ *Teachers' information technology (IT) competency level*

A teacher pointed out that the IT competency level of teachers would be a possible challenge in employing gamification to promote Personal Financial Education. Similar to the justification in Ross et al. (2005) and Culpin et al. (2015), teachers who have a lower IT competency level are more likely to be hesitant to employ teaching approaches with IT elements. Hence, it would be difficult for teachers with low IT competency levels to use gamification to promote Personal Financial Education.

➤ *Absence of hardware*

Two teachers argued that the lack of hardware for gamification is another potential challenge which hinders the use of gamification to promote Personal Financial Education. They explained that even if the software (the game) is fully available, the lack of hardware (such as tablets and computers) prohibits the implementation of gamification.

➤ *Concerns from parents (Misconceptions)*

A teacher indicated that concerns from parents would also be a potential challenge for schools to apply gamification to promote Personal Financial Education. This corresponds to Saleem et al. (2021)'s discussion. The teacher explained that some parents may have misconceptions about gamification and they may simply perceive gamification as electronic games. The traditional belief of 'playing electronic games affects learning' poses a negative effect on gamification and it would be difficult for teachers to convince parents of the use of gamification in students' learning process.

7. Limitations

Despite the fact that this study has revealed teachers' perception of gamification for promoting Personal Financial Education in Hong Kong secondary schools with the support of primary data, some limitations cannot be ignored.

7.1 Limited number of participants

In this study, the number of participants is limited due to the fifth wave of the COVID-19 outbreak in Hong Kong. As mentioned, this study is targeted to recruit 20 to 25 teachers as participants. Unfortunately, the situation in Hong Kong was getting worse from January to March 2022 as the number of confirmed COVID-19 cases increased significantly. The government announced the class suspension arrangement with the special 'summer holiday'. Hence, schools were greatly interrupted and many teachers refused to participate in this study. Even though the researcher had tried his best to invite teachers for Zoom interviews, there were only 10 teachers who were willing to participate. The generalizability of this study is affected as the number of participants is small and their views may not be representative enough.

7.2 Lack of authentic case studies

In this study, not many teachers have tried gamification before and there is a lack of authentic case studies. Teachers' perceptions and opinions were mainly based on their own predictions, teaching professions and experience. The actual outcome of using gamification to promote Personal Financial Education may be different from what teachers claimed.

8. Conclusion and Recommendation

To conclude, teachers' perception of gamification for promoting Personal Financial Education in Hong Kong secondary schools has been explored in this study. During the interviews, teachers gave in-depth sharing on the current promotion situation of Personal Financial Education in their schools. The findings show that the current promotion is limited to a small extent and some limitations reduce the effectiveness of the promotion. These limitations suggest that it is worth exploring new promotion approaches, including gamification. The findings also show that teachers perceived gamification comprehensively, even though this approach is not particularly common in Hong Kong. Teachers perceived that gamification is applicable for promoting Personal Financial Education. On account of the positive relations between Personal Financial Education and gamification, teachers identified and analyzed the potential benefits, costs and challenges of applying gamification to promote Personal Financial Education in Hong Kong secondary schools.

It's worth different stakeholders in the education field to further explore how gamification can be applied to promote Personal Financial Education in Hong Kong, which lays a foundation for future research. Owing to the limitations of this study, it is suggested that the scale of future research can be enlarged by increasing the number of participants. Also, it is considered to explore the perception of other stakeholders, such as students, parents, principals, or even the game developers. Moreover, if there are more cases of using gamification to promote Personal Financial Education in the future, case studies are highly recommended.

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10. Appendixes

Appendix 1: Interview Questions

1. What is the current situation of promoting Personal Financial Education in your school?

- (a)(i) In what ways? (e.g. Formal learning channels, Informal learning channels, etc.)
- (ii) Any target groups? (e.g. BAFS students only, all students, etc.)
- (b) What kinds of financial knowledge/concepts/topics are delivered to students?
- (c) What kinds of teaching and learning strategies are applied during the promotions?
- (d) How is the effectiveness of the current promotion channels? Any examples?
- (e) Is there any limitation on the current promotion channels? Why?

2. What is your understanding of gamification?

- (a) How would you define gamification?
- (b) What is your opinion about the trend of playing electronic games among teenagers?
- (c) What are the similarities and differences between gamification and electronic games?

3. What is your understanding of Personal Financial Education and its linkage with gamification?

- (a) How would you define Personal Financial Education?
- (b) How would you view the linkage between Personal Financial Education and gamification?

4. What are the potential benefits, costs and challenges of applying gamification to promote Personal Financial Education?

- (a) What are the potential benefits to students? Why?
- (b) What are the potential benefits to teachers? Why?
- (c) What are the potential costs? Why?
- (d) What are the potential challenges? Why?

The End

Appendix 2: Interviewees' Background Information

Teacher	Subject	Year(s) of teaching experience*
Teacher A (Mr. Lam)	BAFS	1
Teacher B (Ms. Chung)	BAFS	5
Teacher C (Ms. Chan)	BAFS	10
Teacher D (Mr. Wu)	Economics	18
Teacher E (Ms. Lee)	BAFS	2
Teacher F (Mr. Tang)	BAFS	1
Teacher G (Ms. Ko)	BAFS	1
Teacher H (Ms. Cheng)	BAFS	1
Teacher I (Mr. Yim)	BAFS	1
Teacher J (Mr. Foo)	BAFS	14

* Rounded up to the nearest year(s)

Appendix 3: Activity names provided by the interviewees

Competitions	<ul style="list-style-type: none"> • Stock Trading Guru Board Game Competition (股壇達人比賽) • iKnow Quiz Contest 2020 (全港通識理財問答比賽 2020) • Mr. life Sims (Mr.life 模擬人生) • Hong Kong Online Consumer Financial Education Championship* (香港網上消費理財教育錦標賽)
Workshops / Seminars	<ul style="list-style-type: none"> • HSBC Young Financial Planners Programme - Financial Management Workshop (滙豐青年理財師計劃 - 理財工作坊) • Savvy Planner Workshop (生涯財智策劃家工作坊) • Tung Wah Group of Hospitals Healthy Budgeting Family Debt Counselling Centre (東華三院健康理財家庭輔導中心- 新世代健康理財教育講座) • GET \$ET GO! Money Management Workshop (GET \$ET GO! 理財工作坊)

*Elements of gamification are applied