Project Title	**:**	Gamifying primary students' reading process through an online battle platform: Factors for success and obstacles to be overcome
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Final Report

by

Principal Investigator

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Abstract

The objectives of the study are to implement Reading Battle (RB) in primary schools to promote students' reading interest, strengthen reading comprehension ability, measure the impact of the implementation and the perceived benefits and challenges of using RB to enhance reading outcome. This study will adopt a mixed-methods approach (Creswell, 2013), utilizing both the qualitative and quantitative research methods to address the impact of RB on students' motivation and interest in reading & bilingual reading ability, the factors to facilitate the successful implementation of RB, and tested if the good practices of reading promotion through RB can be replicated in schools with low RB achievements and if the new promotional effort of RB can enhance the school's participation. In the study, the primary participants include language teachers, school librarians, parents, and Primary 2 to 5 students (aged 7-11) from 8 Hong Kong primary schools. The result indicated that students with relatively low reading attitudes initially showed significant improvements as they were deeply engaged in RB afterward and improved their reading comprehension performance. Both intrinsic and extrinsic motivations provoked the improvements. Apart from educational benefits, teachers and parents were beneficial from the researcher's extra help by guidance in how to motivate students to read through RB at school and home. During the project period, schools were suspended due to COVID-19. Students need to rely on online learning resources heavily. Teachers and parents provided recommendations that highlighted the importance of increasing the number of eBooks for the development of RB in the future, which the research team launched more than 50 eBooks to partially address the demand.

Keywords:

Language development, gamification, self-learning, IT-assisted learning and knowledge management

Introduction:

Reading proficiency is one of the most important catalysts of academic success. Past studies have shown that high reading ability correlates with many desirable outcomes, such as academic achievement (Espin & Deno, 1993; Duncan et al., 2007; Loh & Tse, 2009), science proficiency (Cromley, 2009), self-esteem (Billington, 2015), and intrinsic reading motivation (Schiefele, Schaffner, Möller, & Wigfield, 2012).

The emergence of computers, smartphones and the internet in our 21st century digital era offers attractive alternatives to reading texts for our children compared to those in earlier generations (Flood, 2015). For instance, Twist et al. (2007) have found that children's attitude towards reading declined significantly. Previous research has indicated that it is essential to develop activities that can enhance students' reading motivation (Schaffner, Philipp, & Schiefele, 2016; Schiefele et al., 2012; Wang & Guthrie, 2011; Wigfield & Gutherie, 1997). Hence, more investigations are needed to explore what reading-related platforms can promote students' reading motivation and achievement.

Through the support from QEF, Reading Battle (RB) was developed and released in 2014. It tried to gamify the reading assessment process to make it more fun and enjoyable, as it is known that students dislike summative assessment. By including elements of competition among peers via leaderboard and e-badges, their learning experience is greatly improved. Before students can engage in e-quiz on RB, they have to read the underlying book. This motivates them to initiate and persist with the reading task. RB has motivated hundreds, or perhaps thousands, of

students in different parts of the world to develop an interest in reading. This works particularly well for boys as competitions excite them.

With RB, teachers are relieved from time-consuming monitoring and assessment of reading ability through traditional reading comprehension worksheets. Instead, teachers can monitor progress through automatically-generated reports and leaderboards at ease. Based on the reading profile in RB for each student, librarians, teachers and parents can make use of the data to adjust their reading selection and help children develop in areas that they are weak in.

RB caters for learning diversity, as students can read books and answer questions on RB at their own pace. Due to the self-learning capability offered by RB, it was observed in preliminary studies that students with dyslexia and autism improved a lot with RB (Chan, 2016). A well-structured study such as the one proposed here will greatly benefit students, and help advance research in literacy development. By identifying good practices of RB implementation, improving scaffolding strategies, positive learning outcomes can be magnified.

The system data reveals that some schools actually performed up to 10 times better than the others. As students' success in RB could be affected by various factors including promotion efforts, access to books, support from parents and existence of other reading schemes and others, it is worthwhile to identify the success factors and investigate how RB can be modified, how good practices can be replicated in order to best serve the students and motivate more students to achieve their best. The objective of this study is to find out the "secret of success" of RB and to maximise its impact by fine-tuning the game mechanics and replicate good practices in more schools through the means of knowledge management thus benefiting more

students. The successful gamified model could create a scalable impact for students and educators beyond Hong Kong and Greater China.

Review of literature of the project

Importance of reading

Students who are proficient at reading tend to excel academically (Loh and Tse, 2009) and have higher self-esteem (Billington, 2015). Since education relies heavily on textual materials (Schiefele et al., 2012), the ability to read closely affects one's academic and personal development (Hyde, 2007). Despite having the same intellectual ability, students who rarely read perform worse on reading tasks than their peers who read frequently (Cipielewski and Stanovich, 1992). Meanwhile, the benefits of reading go far beyond academic performance (Chu, 2015). As students become more competent in reading, they would transform from the stage of learning how to read to the stage of absorbing knowledge through reading. Curriculum Development Council refers the latter skill as "Reading to learn", where it is one of the four key tasks in Basic Education Curriculum Guide (2014). In the "reading to learn" process, students could acquire a broad spectrum of knowledge from reading, and be able to apply them appropriately even when the material is difficult to understand (Snow, 2002). Hence, reading plays a major role in young students' lifelong learning potential (OECD, 2002).

Challenge of promoting reading

Although Hong Kong primary students have achieved good performances in international reading assessments, for example in the Progress in International Reading Literacy Study (PIRLS) where Hong Kong Primary 4 students came first in 2011, the External School Reviews and various research studies point out that there is still room for improvement in cultivating

Hong Kong students' reading interest and the depth of their reading (The Curriculum Development Council, 2014).

With the emergence of smartphones in this digital era of 21st century, students are being identified as "digital natives" nowadays (Prensky, 2010) and they face more temptations on how to spend their free time than the previous generations (Flood, 2015). It is found that children who read for pleasure has dropped drastically in the past decades (Alter, 2014), and hence, some researchers are now calling for a more innovative and dynamic educational environment in order to arouse students' learning initiatives (Prensky, 2010; Lee and Hammer, 2011). Despite different approaches are employed to boost the learning motivation of students (Tileston, 2010), teachers and parents find it a constant challenge to do so successfully (Brophy, 2008; Froiland et al., 2012). In order for a person to learn effectively and efficiently, many scholars have confirmed the importance of reading motivation to the development of reading ability (Schiefele et al., 2012; Wigfield and Gutherie, 1997). Motivation, which is defined as the drive of doing something (Ryan and Deci, 2000), is often seen as the preconditions for the completion of a specific behavior. Various studies have suggested that motivation affects students' learning "above and beyond cognitive characteristics" (Schiefele et al., 2012, p.427), affecting both their quantity and depth of reading, hence motivation is of utmost importance to students' achievement (Mol and Bus, 2011). Therefore, it is significant that innovative measures are introduced to boost students' motivation and competence in reading.

Gamification

To enhance motivation for learning, educators are exploring "gamification", a process commonly defined as "the use of game design element in non-game context" (Deterding, 2011, p.9). Researchers observed that video games have received widespread popularity in the last

few decades, and the challenges and goals provided in the game have brought the players into the process of active learning (Domínguez et al., 2013). Hence, gamification makes use of gamified features such as points, leaderboards, badges and levels in a non-game context, and provides an experience that imitates the similar psychological effects of games. It is believed that as games are fun and intrinsically motivating, the success of motivating video game players could be applied into other contexts to improve user engagement and motivation.

Reading Battle

In light of the benefits of gamification, an online e-quiz platform, Reading Battle (RB), has been developed to provide a gamified model of post-reading activities in order to promote students' interest and motivation in reading. RB makes use of game-design features such as points, leaderboards, and badges to gamify students' reading process and hence promote their interest and comprehension in reading. The purpose of gamification is to provide a learning environment that utilizes the human desire to play and achieve a flow-like state in a non-game contexts (Zichermann and Cunningham, 2011). After the student has selected a book covered on RB's reading list, the student will read the book, and conduct a battle on RB (answering 10 questions about the book) to self-check their understanding of the book (Sadaghiani, 2012). Reading Battle adopts the framework of 'Scaffolding Reading Experience' (Graves and Graves, 2003) to improve students' reading comprehension, and students will be given a hint if they answer incorrectly. When the test is finished, RB provides instant grading and the students can receive immediate feedback, earns points and receive virtual e-badges. In addition, the top students after scoring an average score of above 80% will have the opportunity to be listed on different leaderboards.

RB has been launched in over 50 primary schools, and it is well received by teachers, students, and parents (Li, 2020). Based on the data collected from Reading Battle, there have been positive changes in students' reading habits. We have observed some highly successful cases of students who have benefitted greatly from RB (Chu, 2016). One of the parents shared with our research team that her son had no interest to read even for kindergarten books prior to joining RB, but now he would urge his mother to buy books of over 200 pages at the bookstore. Another primary four girl came from a low-income family and she could not afford to buy books from bookstores. As there are only limited titles that can be borrowed from the library, it could not satisfy her strong desire to read and do battles on RB. Hence, she spent hours to read in the bookstore and memorize the content of the book by heart, then do RB when she got home (Chu, 2015).

As outlined in the *Basic Education Curriculum Guide (Primary 1-6) (2014),* to "develop an interest in reading extensively and cultivate a habit of reading" is one of the seven learning goals that students are expected to realize as they finish primary education (p.14). RB shares the same initiative and encourages students to read quality children's literature from a wide array of genres. RB provides over 600 books from 10 genres and gives students huge freedom in choosing books that suit their interests, and hence promote their taste and enjoyment of literature materials.

Bilingualism

Despite of the fact that Hong Kong is a bilingual city with two official languages, English and Chinese, a majority of students have not yet mastered the necessary Chinese and English standard even as they progress into secondary schools. As revealed in the recent DSE examinations, nearly half of the candidates failed to achieve the minimum criterion for the

entry of university in both language subjects in the DSE (HKEAA, 2012; HKEAA, 2013; HKEAA, 2014). It is worthwhile to investigate whether RB would be a helpful platform to lay a good foundation and build up students' Chinese and English language ability as they read more books.

Furthermore, RB promotes students' bilingual ability by providing both Chinese and English readings while it encourages peer discussion and collaborative knowledge building process among the primary students. They would discuss the content of the book on the way to school and recommend the interesting book to each other. This goes in line with another learning goal in the *Basic Education Curriculum Guide (Primary 1-6) (2014)* where students should be capable of communicating with others in English and Chinese actively. Contrary to studies in the earlier decades where it was mostly held that bilingual education would delay children's development by forcing them to distinguish between languages early on in their lives (Crawford, 1999), more researchers now discover that bilingual children have an edge in their phonetic processing (Norton et al., 2003), linguistic (Petitto, 2009) and cognitive development (Bialystok et al., 2007; Kave et al., 2008), and academic performance (Rolstad et al., 2005; Slavin and Cheung, 2005). Not only the exposure to a second language would not pose any damage to the first language (Petitto, 2003), it is shown that children who are exposed to second language at early age tend to have better performance, especially in the adaptability to constant changes and efficient processing of information (Bialystok et. al., 2012).

Motivation

Empirically speaking, studies reveal that gamification in education context increases motivation and engagement to a large extent (Cheong et al., 2013; Denny, 2013; Domínguez et al., 2013; Dong et al., 2012). However, as gamification employs mostly extrinsic motivations

such as scores and leaderboards, some are concerned that the positive impacts may be of novelty effect and short-lived (Hakulinen, Auvinen, and Korhonen, 2013). While Deci et. al., (1999) argues that the extrinsic awards would lower intrinsic motivations, Deci later on develops the Organismic Integration Theory (Deci and Ryan, 2004) and acknowledges that certain forms of extrinsic motivation can be internalized and increases autonomy. Studies shows that a greater internalization of extrinsic motivations could result in enhanced engagement and persistence by learners (Stirling, 2014). Our goals is to guide students to use innate drive to play that we all have for intrinsic motivation while by gradually weaning students from external rewards to ultimate celebrations of the learning.

Social game

Meanwhile, researchers also explore motivations beyond the traditional intrinsic-extrinsic dichotomy. In particular, the importance of social interaction is illustrated in various studies and motivational theories. The self-determination theory (Deci and Ryan, 2000) propose the psychological needs for relatedness, along with autonomy, and competence, in achieving the highest level of motivation and engagement, while Lee and Hammer (2011) suggest to focus on the social, cognitive, and emotional and aspects when employing gamification. Cialdini & Goldstein (2004) finds that “Humans are fundamentally motivated to create and maintain meaningful social relationships with others” (p. 598). People find joy in interacting with people (Jordan, 2000; Lazzaro 2004; Sweetser and Wyeth, 2005), and children would also rather work with others instead of on their own (Clements, 1998). As socializing is a motivator for playing (Bartle, 1996; Zichermann and Cunningham, 2011), it is thus necessary to provide social interactions to students (Sweetser and Wyeth, 2005) and to make the game as social as possible (Farzan and Brusilovsky, 2005).

Objectives

The objectives of the study are to implement Reading Battle (RB) in primary schools to promote students' reading interest and strengthen their bilingual reading comprehension ability. Besides, the study measures the impact of the implementation, examines the potential benefits, challenges and their factors to facilitate a successful implementation during the process of using RB to enhance reading outcome.

Theoretical and/or conceptual framework of the project

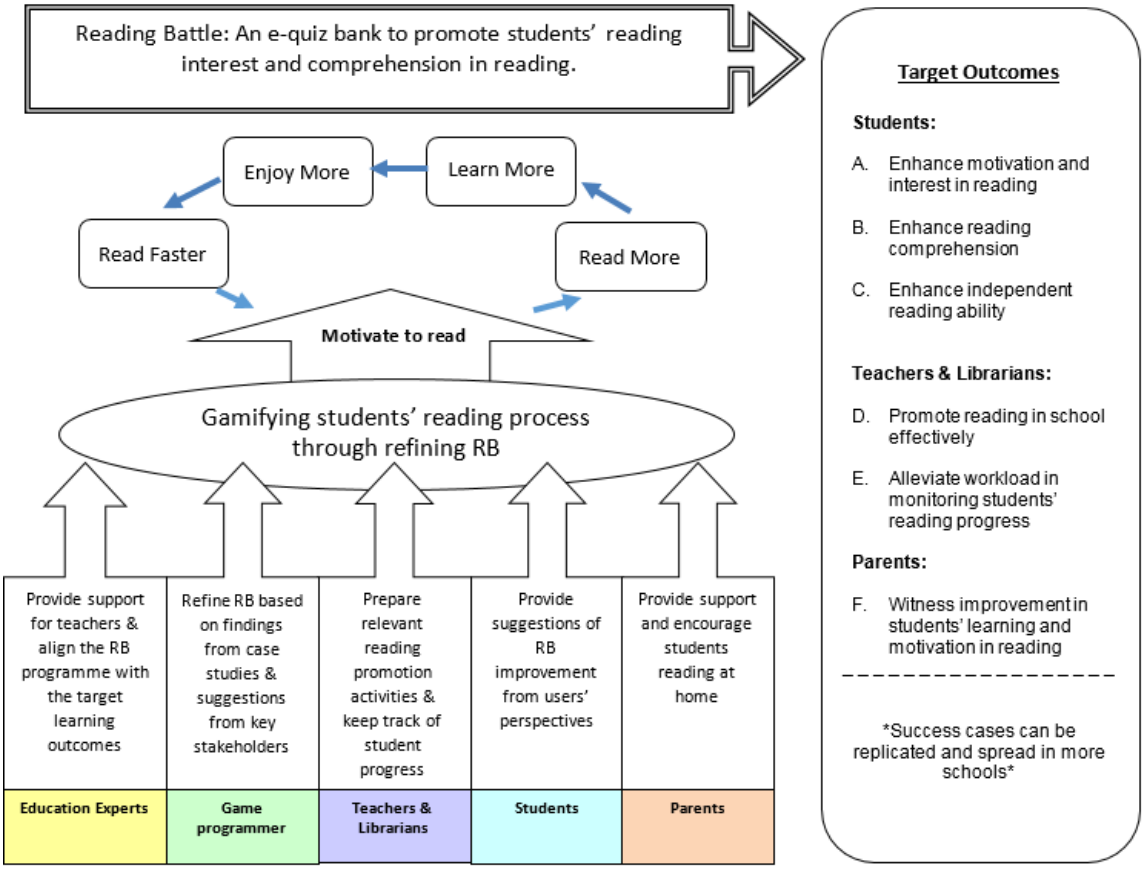
Participatory design approach and intervention

A participatory design approach is a framework that highlights the active contributions of both designers and users when designing a product or infrastructure (Reich et al., 1996; Sanders et al., 2010). Here, the designer refers to the game programmer and education experts, and the users refer to the teachers, librarians, parents and students. It is an essential design strategy for creating artifacts and experiences that reflect the voices of the population being designed for and with (Coenraad et al., 2019). The involvement of users in the design conceptualization phase is advantageous because designers and experts obtain immediate feedback from their target users on improving the features and content of a specific design (Reich et al., 1996; Davis et al., 2017).

Good practices identified through case studies during the first year of this SCOLAR project will also be used to develop, test, implement and refine the RB Reading Promotion Programme through a participatory design approach which emphasizes the active role of all stakeholders in the design process (Reich et al., 1996; Bergold and Thomas, 2012). As such, teachers, school librarians, parents and even students can contribute to decision-making with first-hand experiences and perceptions (Clement and P. Van den Besselar, 1993; Kensing & Blomberg,

1998) to help perfect the programme in gamifying students' reading process and replicate good practices in the low-performing schools. The research approach of this project and the roles of key stakeholders in the collaborative framework through the participatory design approach are illustrated in Figure 1.

Figure 1. The roles of key stakeholders in the collaborative framework through the participatory design approach



The research team, including the education experts and game programmer of this project, will provide support and guidance to teachers to promote reading through RB and modify the game mechanics. Examples include incorporating elements of social games in RB in order to facilitate greater engagement and positive learning outcomes (Hicks 2012; Simões et al.,2013), modifying the number of top scorers appear on the leaderboard to attract more student participation, awarding special e-badges to encourage students to read a wider variety of

Chinese and English books, and so on. Currently, only the top 200 scorers are included in the leaderboard. As the users of RB continue to expand, it is worth exploring whether giving more students a higher chance to be included in the leader board will drive a higher motivation of participation.

We have manipulated certain game mechanics to try to encourage a greater balance of reading in the two languages and motivate students to read more. For example, for the 2016 – 2017 annual Reading Battle Award Ceremony, we introduced two separate awards for Chinese and English books to replace an award for their overall performance in Chinese and English books. We sampled 46 students from one of the local schools. We discovered that students read one more English book on average in 2016-2017 compared to 2015-2016 after introducing an award for completing English books' "battles". 77% of the students who have an increase in the number of English books read did not read any English books from Reading Battle in 2015-2016. For the scores, students earned 46 marks more in the total scores and an average of 10 marks in the English books' "battles" 2016-2017 compared to their performance in 2015-2016. For Chinese books, students showed remarkable improvement in completing 6 more "battles" on average, with an increase of 372 marks in their total scores. Overall, in both Chinese and English books' "battles," students finished 6 more "battles" on average and earned an average of 618 marks in their total scores.

Further modifications will also be made based on the feedback obtained from different key stakeholders. The language teachers (Chinese and English) can prepare relevant activities by reviewing the book list from Reading Battle, making a connection between Reading Battle and their language curriculum, and keeping track of students' reading progress. The school librarians can teach students how to use RB, organize reading promotion activities, show

students different ways to locate relevant reading materials, and encourage students to read extensively. Small awards/incentives can also be arranged by school teachers or librarians. Parents will be well informed about the program. They will be able to access students' reading profiles to keep track of students' reading progress. Parents can support their children by assisting them to locate books their children find interesting, suggesting a regular time for reading, and discussing with their children regarding the books they read. A suggested book list for parents will be provided to encourage them to play an active role in this meaningful reading and sharing experience. Students, being the users and key beneficiaries of the program, can suggest books they find and provide comments on their experience with RB so that suggestions for changes and improvement of the RB program can be identified.

It is anticipated that the refined program will help more students engage in the cycle of growth in reading as suggested by Nuttall (1996), i.e. the more students read, the more they can learn; the more they learn, the more they enjoy reading; the more they enjoy reading, the faster they can read; the faster they read, the more they can read, and the cycle will keep going on and on.

Methodology

This study will adopt a mixed-methods approach (Creswell, 2013), utilizing both the qualitative and quantitative research methods to address the following research questions:

Q1. What is the impact of RB on students' motivation and interest in reading & bilingual reading ability?

Q2. What factors appear to facilitate or inhibit the successful implementation of RB?

Q3. To what extent can good practices of reading promotion through RB be replicated in schools with low RB achievements?

Q4. To what extent the new promotional effort of RB can enhance the school's participation?

Participants

The primary participants of the study include language teachers, school librarians, parents, and Primary 2 to 5 students (aged 7-11) from 8 Hong Kong primary schools listed below in Table 1.

Table 1. List of schools participated

School name	School code	Join year
Lam Tin Methodist Primary School	LTM	2018-2019
S.K.H. Tak Tin Lee Shiu Keung Primary School	TTL	
S.K.H. St. Michael's Primary School	SMS	
S.K.H. Yan Laap Primary School	YLP	
Catholic Mission School	CMS	2019-2020
Father Cucchiara Memorial School	FCM	
CCC Kei Chun Primary School	KCP	
King's College Old Boys' Association Primary School No. 2	KN2	

For schools that participated in the study starting in 2018-2019, the Teacher-librarian selected two grades between P.2 and P.5 and invited the students to participate in the study. For schools that joined our study in 2019-2020, the Teacher-librarian selected one grade between P.2 and P.5 and invited them to participate in the study. The breakdown is listed below in Table 2. The secondary group of participants of the study includes all the students, parents and teacher-librarians that use RB together with best practices.

Table 2. Breakdown of the participants in each school

Schools	Students who started participating in 2018-2019		Students who started participating in 2019-2020		Total number of students
	Grade	Number of students	Grade	Number of students	
LTM	P.2 – P.3	118	P.2	61	179
TTL	P.3 – P.4	144	P.3	63	207
SMS	P.3 – P.4	76	P.3	31	107
YLP	P.2 – P.3	151	P.2	88	239
CMS	/	/	P.2	91	91
FCM	/	/	P.4	31	31
KCP	/	/	P.4	51	51
KN2	/	/	P.3	49	49
					954

There were a total of three data collections. The first data collection was conducted in the second term of 2018-2019 with the four schools that joined the project in 2018. All eight schools participated in the second data collection in the first term of 2019-2020. The third data collection was cancelled due to the school suspension in the second term of 2019-2020. Upper primary school students (P.4 - P.6) and junior primary school students (P.1 - P.3) resumed classes on June 8 and June 15, respectively, since the school suspension in Chinese New Year on January 25 (Education Bureau, 2020). The third data collection (originally the fourth data collection) took place in the first term of 2020-2021 when classes resumed on September 29 (Education Bureau, 2020). This report will focus on the data in the first and second collection. For the data collected in the third collection, we haven't had ample time for analysis.

Selection criteria and procedures

Case studies will be conducted in four schools in the first year. A major advantage of the case study is that it allows the researcher to examine particular cases in great details, in its natural context of situation and investigate into its characteristics and dynamics (van Lier, 2005). Two high performing (HP) and two low performing (LP) schools based on their school RB ranking achieved between Sep 2017 – May 2018 from the QEF project will be selected. Schools with the highest number of students who have read at least 10 books and achieved an average score of 80 or above[1] would be considered as the high performing schools whereas schools with low number of students who meet the above criteria are categorized as low performing schools. For schools who participated the study starting in 2018-2019, the Teacher-librarian selected two grades between P.2 to P.5 and invited the students to participate in the study. For schools who joined our study in 2019-2020, the Teacher-librarian select one grade between P.2 to P.5 and invited the students to participate in the study. Good practices identified will be shared among the four schools in the first intervention during the second term of the first year (Feb–Jun 2019) of the study. In the second year, the four case study schools will remain in the study and four new (LP) schools will be identified based on their RB achievement record in the first term of first year (Sep 2018 – Jan 2019) and the academic standing of the school.

Three interventions will be implemented throughout the study, involving three experimental groups and one control group. The experimental groups include: (1) 2 HP schools joining from the 1st year till completion (Cohort H); (2) 2 LP schools joining from the 1st year till completion (Cohort L); and (3) 2 new LP schools joining in the 2nd year (Cohort NL). The control group would be two additional LP schools joining in the 2nd year (Cohort NC). While the

[1] Reading at least 10 books and achieving an average score of 80 or above are the minimal requirement for getting on the leaderboard.

experimental groups will go through the interventions in various stages, the control group will use revised RB without intervention of good practices, then gradual or delayed intervention will be implemented to it. As such, we can examine the extent to which the interventions are effective in different school contexts and continue to tease out good practices during the process. Refer to Table 3 for a summary of group arrangement and stages of interventions.

Table 3. Arrangement of case study schools, experimental and control groups

Year	**2018-19**				**2019-20 1st term**				**2019-20 2nd term**			
Group					Experimental			Control				
School code	LTM	TTL	SMS	YLP	LTM & TTL	SMS & YLP	CMS & KCP	FCM & KN2	LTM & TTL	SMS & YLP	CMS & KCP	FCM & KN2
Level	P3&4	P3&4	P3&4	P3&4	P3&4	P3&4	P3&4	P3&4	P3&4	P3&4	P3&4	P3&4
Cohort	H		L		H2	L2	NL2	NC2	H2	L2	NL2	NC2
Pedagogy	CS+IN1				IN2	IN2	IN2	RB	IN2	IN2	IN2	IN2*

Remarks:

HP: High performing schools in terms of RB ranking

LP: Low performing schools in terms of RB ranking

H: HP school joining from 1st year till completion

L: LP school joining from 1st year till completion

NL: New LP school joining in the 2nd year (Experimental Group)

NC: New LP school joining in the 2nd year (Control Group)

CS: Case study on good practices and obstacles of implementation of RB

RB: Mere implementation of revised RB without intervention

IN: Intervention

(1) Incorporation of good practices

(2) Incorporation of good practices and introduction of refined RB

*In the 2nd term of 2019-20, full intervention will also be implemented in the control group.

Instruments and methods

A range of instruments were used in this study included in the appendix. Below is a summary of various instruments and methods to be used in addressing the four research questions:

Q1. What is the impact of RB on students' motivation and interest in reading & bilingual reading ability?

(1) Student questionnaires on their motivation, interests in reading, and reading habits (adopted from PIRLS, 2011) (please see appendix 1).

(2) Pre- and post-reading assessments. English reading assessment will be adopted from TSA reading test for P3 students (HKEAA, 2014) (please see appendix 2), and Chinese reading test will be adopted from PIRLS for P4 students (Mullis & Martin, 2015) (please see appendix 3).

(3) Students' RB scores from the RB e-quiz bank database.

Q2. What factors appear to facilitate or inhibit the successful implementation of RB?

(1) Focus group and individual interviews with teachers, parents, librarians and students (please see appendix 4, 5 and 6).

Q3. To what extent can good practices of reading promotion through RB be replicated in schools with low RB achievements?

(1) Intervention of RB promotion in LP schools through participatory design approach. (please see appendix 7)

(2) Individual interviews with the teacher-librarians

Q4. To what extent the new promotional effort of RB can enhance the school's participation?

Results and Discussion

1. Positive impact on students' interest in reading and bilingual reading ability

A previous study (Li et al., 2020) indicated that digital and gamified reading, specifically via the e-platform "Reading Battle (RB)," demonstrated a long-lasting effect on reading interest and a positive impact on academic performance among primary students in Hong Kong. We examined RB's effect on students' engagement on reading performance among primary students with low initial reading attitudes. From the questionnaire and language assessment in the first data collection, we identified 104 primary school students (with 47 boys, 45.2%) in the third grade from four local primary schools in Hong Kong. The result indicated that those relatively low in initial reading attitudes showed significant improvements as they were deeply engaged in RB afterward and improved their reading comprehension performance. From their engagement on RB, it demonstrated a positive effect on children's reading interest, reading habits (frequency of reading, reading choices), reading ability (e.g., vocabulary, reading comprehension, writing), and social interaction with parents and peers (Li et al., 2020).

2. Secret of success and recommendations for the implementation of RB

2.1 Intrinsic and extrinsic motivation

RB engagement's driving factors were investigated through semi-structured interviews on children, parents, and teacher-librarians (Li et al., 2020). The findings indicated that both intrinsic and extrinsic motivations provoked by the RB platform contribute to deep engagement. The factors triggered by intrinsic factors include the sense of achievement, self-control, curiosity, and autonomy to read and learn. The extrinsic motivation factors include completion of the reading battles, reaching a higher ranking on the leaderboards, communicating and competing with peers, obtaining more badges, rewards and certificates.

2.2 Recommendations

Apart from the secret of success established before, teacher-librarians and language teachers provided some feedback as recommendations for RB's future success.

2.2.1 Increase in the amount and breadth of e-books

RB platform contains approximately 600 books with over 90 eBooks covering 11 categories of books such as science, history, fairy tales, fiction, etc. With the increase of users and usage, students, parents, and teacher-librarians suggested including more books with diverse themes and difficulty levels.

2.2.2 Adaptive e-quiz system and personalized book recommendations

Some students and parents reflected that some questions are too challenging for them.

There is an urgent need for an adaptive e-quiz system catering to individual ability and pattern. Adaptive learning systems use various learning algorithms, such as artificial intelligence, machine learning, and item response theories to personalize the learning experience (e.g. Mavroudi et al., 2017; van der Linden, 2016). With adaptive learning systems in place, RB can tailor to the specific need (in terms of the difficulty level of a book to be tackled by students) of each student. For example, once a student answers a set of 10 questions for a book on RB, the system knows the level of the student and then can recommend the student to (1) continue to read books at the same level (assuming that the student achieved a satisfactory score); (2) take a challenge by tackling a book at a higher level (assuming that the student achieve a high score); and (3) do the next battle with a book at a lower lower (assuming that the student achieved a low score).

2.2.3 Promoting the benefits of RB to teachers, parents, and mass media

As shown in figure 1, an individual child's growth and development are influenced by many factors, including family, peers, schools, mass media, and culture. RB's application demonstrated a positive effect on reading interest, habits, motivation, ability, academic performance, and social interactions. Promoting RB's effectiveness may help teachers, parents, and social media understand this e-reading platform more and, consequently, benefit more children.

3. Impact of good practice report in promoting Reading Battle for schools with low RB achievements

During the project, we have introduced a good practice report that summarizes the "secret of success" from schools with high RB achievements. The report contains four target aspects and provides some activities/ actions as suggestions.

1. Library and school website design
2. Students
3. Parents
4. Principal and other subject teachers

Five of the eight schools' teacher-librarians participated in an individual interview. They were asked which of the above aspects they find most and least applicable, their experience in applying new promotion tactics from the report, and their recommendations to RB and the report in the future.

3.1 The most and least applicable aspects of the good practice report

The most popular aspect selected by three of the six Teacher-librarians was students. One of them commented on the ranking chart by stating, "once the students get to know about RB and the ranking chart, they became very motivated to participate because they wanted to know their rankings and compete with their peers." It reiterated the extrinsic motivation of the leaderboard with their peers. Some mentioned the ready-to-read eBooks and the design of the challenging questions. The reason was that students could not skip the process of reading before they attempted the questions or the result may lowered their average score in total. Two of the teacher-librarians chose the library and school website design aspect. The teacher-librarian could not dedicate all library lessons to promote RB as she needed to teach some skills about

library usage and reading. She commented, "if language teachers can help promote RB during their lessons, it will be beneficial", which was implemented after receiving the report and will be discussed further. Another teacher shared that it would be favorable if the principal were well-informed about the students' achievement as changes in promoting RB that happened outside the library lesson required the principal's approval.

The least practical aspect selected by four teacher-librarians was parents. A common reason was that the report's activities require parents' active participation, which was not feasible. One of the teachers acknowledged the importance of parents' role in promoting RB by the phenomenon at her school, saying, "Higher form students typically log-in to the website and finish the readings by themselves. Lower form students require help from their parents in participating in it, but we did not promote it to the parents. Therefore it did not reach the lower form students very well. Involvement of parents do affect the effectiveness of RB, and the result shows that higher form students are more engaged in it". However, she admitted that it is hard to promote through other ways except e-class, but the parents seldom visited.

Another teacher pointed out most of their students come from grassroots families, and students are self-motivated to read or use Reading Battle. So, teachers take on the responsibility to keep the momentum of RB. One of them commented library and school website design is not applicable since they have similar tactics enforced prior to receiving the report. For example, they had a RB books cart in the library, which contained the books from RB platform only, and the school promoted RB through the school website by uploading few video tutorials on how to log in and understand the platform layout prior to receiving the report. One of the teachers said all of the aspects were applicable.

3.2 Changes in promotion of Reading Battle and the impact of the students' reading interests and activities

Two teacher-librarians made changes in promoting Reading Battle after receiving the good practice report.

One of the teacher-librarians stated, “I invited language teachers (English and Chinese) to demonstrate how to access RB during their lessons. During COVID-19, since the public and school libraries were closed, with the promotion from language teachers, the effectiveness of promoting e-books was feasible and ideal. Students had more time and chances to hear about RB and shared that the parents could reach out to the language teachers and the students’ reading interest improved. Another teacher initially promoted RB during library lessons, and the outcome was not impressive. During the school suspension, the teacher shared RB upon the principal’s approval in the online morning assemblies via Google Meet and announced students’ RB rankings weekly. The principal also urged teachers to promote Reading Battle by having students use RB in the reading week. After the reading week, students kept using RB, and it became a lot better received by students.

Three teacher-librarians did not make any changes as they preferred to use the original promotion. One of the teachers preferred to treat RB as a piece of homework and regularly promoted it in assemblies. Another teacher stated they had a well-developed internal reading scheme that students record with a booklet to earn a small gift with three different levels, “elf” (the lowest), “fairy,” and “experienced reader” (the highest). She shared the results improved

during the school suspension. And one of the teachers stated she acknowledged the feasibility of updating the school library page, but her school did not plan to make significant changes on their website for now.

Lastly, the teacher-librarians were invited to make suggestions on what to include in the report and their feedback on RB.

Two of the teacher-librarians showed interest in suggestions on knowledge exchange in promoting RB between schools or teachers from the same school e.g., language teacher, as it would be an excellent opportunity to learn from each other. Three teacher-librarians suggested increasing the number of eBooks that echo the recommendations from some teacher-librarians and language teachers from the focus group interview.

4. New promotional efforts that enhance the school's participation

During the SCOLAR project, the researcher has proposed various activities that targeted parents, teacher-librarians, and students. These activities were conducted online via Zoom due to COVID-19. They received active participation and positive responses. For parents, we organized a Parents' Reading workshop from October to December 2020. There were 500 parents registered to attend 8 sessions on motivating their children to build a reading habit and learn from reading. We shared some secret tips and tactics with the parents and covered a topic for each one hour session. The topics include carrying out bedtime stories, storytelling techniques, book selection, handling reading matters with SEN students (Dyslexia, Autism disorder, Printed disability), and Reading 2.0 in the digital age. We provided the answers to

some frequently asked questions, such as how to motivate boys to read, the difference between "learning to read" and "reading to learn," and how to support your children in reading to learn.

For the teacher-librarians, the researcher organized four Professional Development workshops. The workshops covered topics including "From Reading to Learn: Library collections to library programs," "From Reading 2.0 to Information Literacy to 21st Century Skills," and "Integration of reading strategies across the curriculum." There were over 140 registrations from primary schools. Teacher-librarians who joined the workshop are encouraged to join RB upon the principal's approval.

For students, the researcher held the 2nd and 3rd annual digital story writing workshops. The workshop invites students who have read more than 200 books and obtained an average score of over 80 to participate in workshops, write an eBook and design the questions with immense support by the research team. The final product may have an opportunity to launch on RB for all students to read and complete the challenge. In the 2018-2019 and 2019-2020 workshops, an increasing number of students are eligible to join the workshop and hit the record high numbers with the youngest student at P.1. The researcher has organized 8 workshops with guest speakers to teach the students on how to write their stories, questions and provide individual feedback to the students to perfect them. They have written over 50 Chinese and English eBooks with our support and received superb responses on RB. There are over 20 books that received over 1000 votes on 3 stars out of five stars or above rating. The most read eBook has been viewed over 13,000 times.

In addition, the researcher partnered with Academy 22 Education for All Foundation (A22 Foundation), a non-profit organization established by Dr. Chu and his partners, to expand the scope of support provided for learners worldwide in receiving a better education to held 2 Annual digital story writing competition (Academy 22 Education for All Foundation, n.d) in 2019-2020 and 2020-2021. In 2019- 2020, the Digital Story Writing competition was held for local primary school students. And in 2020- 2021, since the positive responses from the previous contest, an Asian Digital Story Writing competition was held with support by HKEdCity, Lions Club of Mount Davis Centennial and MegaLIfe for all students in Asia to participate (please see appendix 8). The theme was "AI, Robots, Love and Peace," where students will be introduced to AI and robots during the workshop and, hopefully, inspire them to write a story relevant to the theme. There were about 500 registrations from Asia.

With the support from the SCOLAR project and new promotional effort, we achieved a 78% increase in the number of schools using RB since 1st June 2018. Up to the end of 2020, more than 70 schools are using RB, 13% of the total number of primary schools in Hong Kong.

Conclusions and Recommendations

The study's objectives are to strengthen students' reading interest and comprehension ability through RB. Besides, to examine the impact of using RB in primary schools, discover the benefits and challenges, which could be the "secret of success" formula, and tried to replicate the success in lower-performing schools. The study proved the positive impact of RB in primary school students' reading interest, engagement, and reading comprehension ability by the intrinsic and extrinsic motivation. Intrinsic motivation includes a sense of achievement, autonomy to read and learn, and curiosity. Extrinsic motivation includes the ranking chart known as the leaderboard, communicating and competing with peers to obtain more badges on

RB and certificates. The researcher has discovered the "secret of success" in promoting RB, which requires continuous and collaborative support from parents, teacher-librarians, language teachers, the RB team, and students to develop students' reading habits on RB. It includes principal and language teachers' promotion efforts apart from the teacher-librarian during lessons, morning assemblies at school, and parents' encouragement at home. The factors of success were shared with lower engaged schools. Some schools have shown that they could adapt to the changes and noticed the improvements that more students are reading on RB actively, while some could not witness the impact yet, which the limited amount of time to observe during the project could be one reason for the setback. Furthermore, the increasing number of schools joined RB demonstrated the importance of promotional effort, e.g., active participation in workshops for the teachers and parents. During the study, there were few observable limitations. First, over 1 year of school suspension was due to COVID-19, making the data collection a burdensome task for the researcher, teachers, and students. One of the data collections has to be canceled in the first half of 2020 due to the outbreak. And the last data collection was conducted online, which required additional coordination with the teachers and students as the school hours were cut short. Second, we could not fully satisfy the demand in the increase of eBooks due to limited human resources as suggested by the teacher-librarians. For further studies, the researcher is interested in examining the potential benefits and challenges of the new promotional effort along with using RB on the students, teachers, and parents' workshops. For further enhancement to RB and research on it, the researcher would like to apply AI into the design of RB so that it will become an even more powerful and useful platform for motivating and guiding students in developing reading interest, habit and abilities.

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Appendices

Appendix 1 – Questionnaire to students

第1部份 –– 基本問題

題號	題目	答案
1.	你喜歡閱讀嗎?	☐ 非常喜歡 ☐ 喜歡 ☐ 不喜歡 ☐ 非常不喜歡
2.	你閱讀課外書的頻率是什麼?	☐ 每個月1本 ☐ 每個月2本 ☐ 每星期1本 ☐ 每星期2本 ☐ 每星期3本 ☐ 每星期4本或以上 ☐ 我沒有閱讀課外書的習慣
3.	你每月或每星期會有幾多天使用「閱讀大挑戰」?	☐ 每個月1天 ☐ 每個月2天 ☐ 每星期1天 ☐ 每星期2次天 ☐ 每星期3天 ☐ 每星期4天或以上 ☐ 我沒有使用「閱讀大挑戰」的習慣 ☐ 我不知道「閱讀大挑戰」是什麼
4.	如果你有使用「閱讀大挑戰」的習慣, 你通常會在哪裡使用? (可選多過一項)	☐ 在家中 ☐ 在學校(於課堂上) ☐ 在學校(於課餘時間) ☐ 在公共圖書館 ☐ 在其他地方
5.	如果你有使用「閱讀大挑戰」的習慣,你通常會怎樣使用? (可選多過一項)	☐ 自己一個 ☐ 和家人一起 ☐ 跟朋友/同學一起 ☐ 在老師的陪伴下
6.	請推薦三本您認為應該增添到「閱讀大挑戰」中的書。 (中文或英文都可以)	

1.

2.

3.

第2部份 –你對閱讀的看法

題號	題目	非常不同意	不同意	同意	非常 同意
7.	我喜歡會令我思考的書本。				
8.	我的閱讀能力非常好。				
9.	我是自願進行閱讀的。				
10.	我會跟家人討論閱讀的事情。				
11.	閱讀時，我覺得故事人物與我無關。				
12.	我不會閱讀跟我興趣有關的書籍。				
13.	我只喜歡閱讀簡單的書籍。				
14.	我可以在閱讀方面幫助別人。				
15.	我喜歡自己選擇閱讀材料。				
16.	我會跟朋友討論閱讀的事情。				
17.	我會尋找與課堂有關的閱讀材料。				
18.	我會在腦海中幻想故事情景。				

請到下一頁。

題號	題目	非常不同意	不同意	同意	非常同意
19.	我已經掌握了怎樣閱讀。				
20.	我看一本難度高的書會感到滿足。				
21.	我會用閱讀去發掘新事物。				
22.	我會自己決定甚麼時候閱讀。				
23.	閱讀時，我會因為太投入而忘記時間。				
24.	我與同學可以通過閱讀聯繫。				
25.	我的閱讀能力很差。				
26.	我比較喜歡閱讀有關喜歡的科目的書籍。				
27.	我閱讀時感到無能為力。				
28.	我會幻想自己是書本中的人物。				
29.	我會閱讀有挑戰性的書本。				
30.	我不會跟任何人討論有關閱讀的事情。				

這是問卷的結尾，感謝您的參與。

Appendix 2 – English reading assessment

Name: **Class:**

March 18, Sunday

Daddy took me to the hospital after breakfast to see Mummy. We went by MTR. It was very wet outside. I could see umbrellas everywhere.

I went into the room. Mummy was eating. I saw two babies sleeping. Mummy said, "You have a new baby sister and a new baby brother. They are twins."

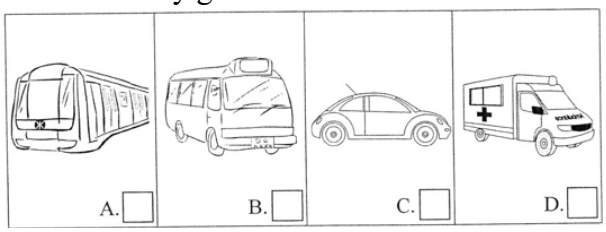
The twins are so small. My baby brother has lots of hair but my baby sister has no hair. My baby sister likes smiling but my baby brother always cries. I call my brother 'Mr Hairy' and my sister 'Miss Smiley'.

The nurses in the hospital are very kind to the babies. They said to me, "The babies look like you!" I think the nurses are right. We all have big eyes!

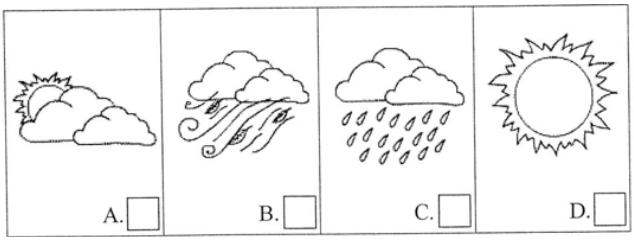
I wanted to give some sweets to the babies, but Mummy said, "Babies can't eat sweets! They can only have milk." Then I said, "I'll buy them toy cars and dolls next time. I think they will like them."

I am very happy today. The twin babies are lovely and I love them very much.

1. How did Mary get there?



2. What was the weather like?



3. Read paragraph 4: We all have big eyes!
The word 'We' refers to _____.

A. the nurses
B. the twin babies
C. the twin babies and Mary
D. Daddy and Mummy

4. Mary wants to buy _____ for the babies.

A. toy cars and dolls
B. sweets and milk
C. dolls and sweets
D. toy cars and sweets

5. Mary likes the twin babies. Which sentence tells you this?

A. I saw two babies sleeping.
B. The nurses in the hospital are very kind to the babies.
C. I think they will like them.
D. The twin babies are lovely and I love them very much.

Adapted from Territory-wide System Assessment 2007

Appendix 3 – Chinese reading assessment

閱讀下面的文字，然後回答問題。

一個不可思議的夜晚

作者：Franz Hohler

小安十歲了，所以即使在半醒的狀態下，她也可以從臥室走到浴室。她的房門一般會留個小縫，有一盞夜燈照得走廊夠亮，讓她可以經過電話桌，走到浴室。

一天晚上，她去浴室途中經過電話桌的時候，聽到有點微弱的嘶嘶聲，但是因為她半醒半睡，並沒有真正的注意它。直到回房間的路上，她才看到聲音的來源。電話桌下有一堆舊報紙與雜誌，現在開始移動了，聲音就是從那裡來的。突然，這堆東西開始掉下來，掉得滿地都是報紙與雜誌。小安不敢相信自己的眼睛，她竟然看到一隻鱷魚從電話桌下冒出來。小安僵立在原地。她的眼睛睜得像碟子那麼大，看著鱷魚完全從報紙中爬出來，慢慢的觀看公寓的四周。牠似乎剛從水中出來，因為牠全身在滴水，踩到哪，地毯就濕到哪。

鱷魚的頭左右搖擺，發出嘶嘶的聲音。小安用力的吞了吞口水，看著鱷魚的鼻子和可怕的長排牙齒。牠的尾巴慢慢的搖擺。小安曾經在《動物雜誌》中讀過，鱷魚怎麼樣用尾巴潑水來趕走或攻擊敵人。

她的視線落在腳邊舊報紙堆中掉下來最近一期的《動物雜誌》上。她又嚇了一跳。之前，封面上有隻大鱷魚在河岸上。現在，河岸是空空的！

小安彎下來撿起那本雜誌。就在那一剎那，鱷魚用力揮動尾巴，把地上插著向日葵的大花瓶砸破，向日葵掉了一地。小安很快的一跳，跳進她的房間，把門關緊，抓住她的床，往門邊推。她建立了一道保護自己的安全堡壘，鬆了一口氣。

但，接著，她猶豫了一下。要是那隻野獸只是肚子餓呢？或許該給鱷魚一點東西吃，才能讓牠走呢？

小安再看那本雜誌。假如鱷魚能夠從圖中爬出來，或許其它動物也可以做得到。小安急忙翻看雜誌，看到一群紅鶴在熱帶森林的沼澤中，就停了下來。正好，她想，牠們很像給鱷魚的生日蛋糕。

突然，一聲巨響，鱷魚的尾尖穿過了破裂的門。

很快的，小安把紅鶴的圖片放在門的破洞上，用最大的聲音說：「出來！出來！飛出沼澤！」然後，她從破洞把雜誌丟到走廊上，一邊拍手，一邊大喊尖叫。她幾乎不敢相信接下來發生的事情。突然間，整條走廊都是不停鳴叫的紅鶴，狂野的拍打著翅膀，瘦長的腿到處亂跑。小安看見一隻鳥叼著向日葵，另一隻從掛勾上拿了媽媽的帽子。她還看到一隻紅鶴在鱷魚的口中消失，鱷魚快快的咬牠兩口就吞下去，很快的又抓住另一隻，是叼著向日葵的那一隻。

吃完兩客紅鶴，鱷魚好像吃夠了，在走廊中央很滿足的躺著。小安等到牠閉上眼睛，再也不動之後，輕輕打開房門溜到走廊上，把空的雜誌封面放在鱷魚的鼻子前，輕聲的說：「求求你，求求你回家去。」然後，她溜回房間，透過門上的洞看到鱷魚回到雜誌的封面。

現在，她小心翼翼的走進客廳，有些紅鶴聚集圍著沙發，有些站在電視上。小安把雜誌翻到空白圖片的那一頁，說：「謝謝，非常謝謝。現在你們可以回到沼澤裡了。」

早上，她很難跟爸爸、媽媽解釋為什麼地上濕了一大片，而且房間的門為什麼破了一個洞。他們根本不相信鱷魚的事情，即使媽媽的帽子再也找不到了。

1. 鱷魚是從哪裡來的？

A. 浴室
B. 雜誌的封面
C. 床底下
D. 附近的河

2. 為什麼小安覺得鱷魚要攻擊了？

A. 牠露出長排的牙齒。
B. 牠發出嘶嘶聲。
C. 牠開始哼氣噴氣。
D. 牠搖擺尾巴。

3. 以下**哪**一件事情是在故事裡最早發生的**？**

A. 小安看見**鱷**魚。

B. **鱷**魚吃了兩隻紅**鶴**。

C. 小安走去浴室。

D. 小安**跑**進房間，把門關緊。

4. 作者沒有告訴我們小安的遭遇是不是一場夢。以下**哪**一個證據可以證明這可能是一場夢**？**

A. 爸媽沒有被**晚**上的**吵**鬧弄醒

B. 紅鶴在電視上留下的羽毛

C. 走廊上的**腳**印

D. 多了個破洞的門

5. 小安今年多大了**？**

A. 七歲

B. 八歲

C. 九歲

D. 十歲

編自促進國際閱讀素養**研**究－2006

Appendix 4 – Interview questions with teachers

1. 你認爲你學生在使用【閱讀大挑戰】之後在閱讀方面有進步嗎？
2. 你認爲你學生在使用【閱讀大挑戰】之後在學業方面有進步嗎？
3. 你認爲【閱讀大挑戰】能鼓勵學生去多看不同類型的課外書嗎？
4. 你認爲貴校有什麼因素協助【閱讀大挑戰】發揮它的功效？
5. 你認爲貴校有什麼因素阻擋【閱讀大挑戰】發揮它的功效？
6. 除了【閱讀大挑戰】，貴校還有什麼其他閱讀推廣計劃嗎？
    a. 你認爲它們跟【閱讀大挑戰】有互補或相衝嗎？
7. 你在貴校推廣【閱讀大挑戰】的時候有碰到什麼困難嗎？
8. 你認爲【閱讀大挑戰】能在哪一方面改善？

Appendix 5 – Interview questions with parents

1. 你嘅小朋友鐘唔鐘意睇書? 你會唔會鼓勵小朋友睇多d書?
2. 你有無留意到自己小朋友對咩類型嘅書比較有興趣?
3. 你小朋友有無試過睇書睇到好投入或者好享受呢? 你對於小朋友睇書睇到咁投入有咩感覺?
4. 你會唔會鼓勵小朋友揀d難度較高嘅書睇呢? 點解呢?
5. 你有無留意到學校嘅閱讀推廣活動點樣影響小朋友既閱讀習慣 ?
6. 你多唔多同小朋友一齊去搵書/借書? 有， 或者無，都請講吓點解呢 ?
7. 你多唔多陪小朋友一齊去睇書? 有， 或者無，都請講吓點解呢 ?
8. 你有冇參加學校準備俾家長同閱讀有關嘅活動? 係邊方面幫到你?
9. 你認為小朋友使用【閱讀大挑戰】之後，有無邊方面叻咗? 同有無增進你對閱讀既興趣? (例如:睇書既速度，答問題既能力，睇英文既自信)
10. 你認爲小朋友使用【閱讀大挑戰】能否協助增進你和他/她嘅關係 ?
11. 除咗已經提及到嘅野,你自己對【閱讀大挑戰】仲有咩睇法?
12. 你認爲【閱讀大挑戰】戰可以係邊一方面改善?

Appendix 6 – Interview questions with students

1. 你地鐘唔鐘意睇書? 點解呢?
2. 你對d咩野書比較有興趣?
3. 你有無試過睇書睇到好投入或者好享受呢? 可唔可以形容一下?
4. 你地會唔會揀d難度較高嘅書睇呢?可唔可以俾d例子，同講下點解會咁樣揀?
5. 學校既閱讀推廣活動點樣影響你既閱讀習慣？
6. 你地認為使用【閱讀大挑戰】可唔可以幫到你？系邊方面？(例如:睇書既速度，答問題既能力，睇英文既自信)
7. 你認爲使用【閱讀大挑戰】能否協助增進你和家人或朋友的關係？(例如系同屋企人或同學傾關于閱讀或【閱讀大挑戰】既事)
8. 你地認為【閱讀大挑戰】有無增進你對閱讀既興趣? (譬如話幫你搵到符合你興趣既書，又或者系俾到機會你去按住自己既速度去睇書同答問題)
9. 你認爲閱讀大挑戰可以係邊一方面改善？

Appendix 7 – Good practices report

Gamifying primary students' reading process through an online battle platform:

Factors for success and obstacles to overcome

Good practices report

A. Introduction (aims of the report)

This report of recommendations aims to assist schools, especially teacher-librarians, to identify key principles and good practices that may effectively promote reading and the use of Reading Battle (RB) in primary schools. As a key aim of the project, actualization of the above measures would play a significant role in students' language improvement and increase in competence and autonomy in reading and RB use. It is likely that they would find stronger relatedness with their friends and family. As this project proceeds on its future phases, the recommendations will be modified twice and a finalized version will be released to participating schools in June 2020. The report will also be available as a project deliverable, accessible to elementary institutions locally and internationally.

B. Overarching principles

The following overarching principles should be observed to ensure that reading motivation and achievement is properly developed. A love and affinity for reading can change the course of a child's life; from more immediate prospects such as the importance of reading comprehension in education settings, to more distant endeavours such as high-speed information processing in work settings. To assist in developing reading motivation and achievement in students, schools can provide promotional activities with the following overarching principles:

1. **Enjoyable**
    - Enjoyment is an intangible reward derived from reading, it is a main driver in autonomous reading activities
    - An enjoyable reading process would prompt students to revisit reading activities as they truly prefer spending their leisure time this way
2. **Inclusive**
    - Reading ability, reading motivation, and reading resources varies between individual students
    - Each reading-related event that appropriate measures are taken to accommodate the aforementioned variables
3. **Rewarded with recognition**
    - Like many other habits, recognition is a strong reinforcement that solidifies students' views of reading as a positive activity
    - Depending on the approach, both tangible and intangible rewards are acceptable
    - For tangible rewards, they could relate to reading theme of the term, or encourage students to read further.

      Examples include:
        i. A single print book
        ii. Book coupons

iii. Small mathematical/ scientific games for the school term within which reading of science-related books are encouraged

- Intangible rewards could be issued throughout the school year, not necessarily at the conclusion of a reading program

  For example, teachers' verbal compliments on students' progress and effort would motivate the latter in continuing their endeavours, especially when they encounter challenges and have a hard time moving forward.

  At the conclusion of a reading program, if students' reading achievements reach a certain level, intangible rewards could include bonus merit points in their report card.

- One example that combines both intangible and tangible rewards from a school include a ticket/ opportunity to join a year-end lunch party where students could enjoy free ice-cream from an ice-cream truck parked inside the school. Such activities would serve as a strong incentive and could serve as a year-long goal for students to achieve. Students could also encourage each other to read more in order to qualify for the party which they can attend and enjoy together.

4. Longitudinal and aligns with school calendar

- Reading activities could align with the school calendar.
- Activities with an accumulative nature (e.g. total number of books borrowed from the library) could span for the entire school year (i.e. September to June/ July of the next year)
- Short-term reading activities could promote reading at home during long-holidays (e.g. Christmas, Chinese New Year and Easter)

C. Roles of different stakeholders

1. School

- Provide support and financial resources that supports reading promotion activities.
- Give priority and emphasis on reading-related activities (e.g. schedule school-wide weekly reading time)

2. Teacher-librarian

- Would be the best teacher to serve as the main coordinator for RB. As the role requires a certain extent of librarianship and information management skills, assignment of the coordinating role to language or IT teachers have proved to inhibit the integration of RB within schools.
- Utilize their expertise to help students develop their information literacy and to learn through reading
- Strengthen cooperation

3. Other subject teachers

- Could attempt coordination with teacher-librarian in developing their students' reading comprehension abilities, and broaden their reading horizons on topics taught (e.g. planning for the creation of a student-designed math workbook as a Math-Library class collaborative project)

4. **Parents**
    - Parents are key gate-keepers in children's access to reading; RB provides a down-to-earth way for parents to engage their students in reading activities

D. Exemplary reading promotion activities

An extensive list of exemplary reading promotion activities have been compiled and attached as Appendix 1. The activities are all designed according to the over-arching principles (Section A) proposed in this report.

The nature of reading promotion activities may be divided into six main categories: a. accumulative, b. merit-based, c. training-related, d. inter-subject coordination, e. parent-oriented, and f. habit-forming. All categories will be elaborated below. Although the categories are not mutually exclusive, reading promotion activities are recommended to be designed with one particular division in mind. As a school-wide reading promotional campaign, a combination of reading activities matching the different categories can ensure an all-rounded program.

1. **Accumulative**
    - Targets of accumulative activities often focus on the total number of books read/ borrowed by individual students
    - The target would also be the bases for rewards/ recognition, often, a tiered target rank is created and corresponding levels of rewards are provided.
    - Any student attaining a target would receive a reward/ recognition

    Advantages:

    - Extensive reach across a wide student base, often applicable and attractive to students of all grades
    - A tiered target structure may accommodate students with various abilities and priorities but still reach a large student base to spread the joy of reading
    - Easily attainable targets (e.g. small number of books) would be a good starting point for students with low prior reading engagement

    Obstacles/ drawbacks:

    - As this is a quantitative exercise, it will be difficult to follow/ ascertain students' reading quality
    - These activities usually last an entire school term/ year. Students may easily forget about it; teacher-librarians would have to conduct period checks on their record books and remind students to participate.
2. **Merit-based**
    - Merit-based activities are often competitions where a few students with outstanding entries/ performance are awarded with a prize

    Advantages:

    - Encourages quality reading and related output (e.g. student-written letters)
    - Students with outstanding entries/ performance would receive strong recognition for their work and effort, reinforcing their reading interest

    Obstacles/ drawbacks:

    - Less appealing to students with lower reading interests and abilities

3. **Training-oriented** (e.g. information literacy development)
    - Provide small groups of students with training in information literacy (e.g. interview skills)

    Advantages:

    - Equips students with transferrable skills
    - Boosts student interests by opening a new perspective to their reading approach

    Obstacles/ drawbacks:

    - Only a small group of students may benefit
    - Requires intensive input on the part of teacher-librarian, limiting the possibility of high recurrence

4. I**nter-subject coordination**
    - Coordination with subject teachers to provide books related to subject teaching

    Advantages:

    - Broaden student horizons in subject-related aspects
    - Help student discover their interests in different subjects

    Obstacles/ drawbacks:

    - Require close coordination and commitment amongst subject teacher and teacher-librarian

5. **Parent-oriented**
    - Organize parent-targeted workshop/ seminars to promote important practices such as parent-child co-reading

    Advantages:

    - Reinforce parents' roles in helping students develop positive reading habits
    - Successful implementation may promote parent-child relationships
        - Broader range of discussion topics
        - More quality parent-child time
        - Reinforces child's perception of reading through parental encouragement

    Obstacles/ drawbacks:

    - Full-time working parents might not have time to join the workshops or have the time to conduct reading-related activities with children

6. **Habit-forming**

- Aims at cultivating reading habits for students, not necessarily with rewards

Advantages:

- Regular reading activities (e.g. school-wide reading class) could steadily build student habits

Obstacles/ drawbacks:

- Arrangement of such activities depend largely on school policy and timetable arrangement
- Coordination between teacher-librarian and class teachers are of high importance

E. Promotion of Reading Battle

As backed by research and recognized by many teacher-librarians, RB has a strong role in improving students' reading motivation and language abilities. This section will list out good practices in RB promotion and also related obstacles, most of which could be solved through aforementioned reading promotion activities.

Good practices in RB promotion

1. **Introducing students to RB at a young age and at appropriate times during the school year**
    - This is an important step to initialize RB use for students. It is possible to introduce RB to students as early as Grade 1.
    - A suitable time to introduce students to RB would be the beginning of the school year, and the provision of RB may be repeated to students at the beginning of consecutive terms.
    - The following practices are suitable for RB introduction:
        i. For schools with strong reading atmosphere and self-motivated students:
        Create a video on login process and upload to campus television (may be viewed at TV locations within school and also online at home)
        ii. For schools with weaker reading atmosphere, or for students of lower grades:
        Conduct first login during library class, and complete one book together

2. **Creating RB corner in library**
    - An eye-catching shelf/ corner with RB books may easily spark student interests in reading and then battling the books
    - Colored labels could be added to indicate difficulty/ books' linkage to RB

3. **Include RB icon and link on school website/ intranet**
    - Allows students and parents to easily access RB

4. **Check on students' RB progress periodically**
    - Teacher-librarians could do so easily through the RB website

- Regular monitoring can allow understanding of student use and progress in RB
- Compliment students with good performance to reinforce their use of RB
- Encourage students to try books of lower difficulty levels if they fail battles continuously, so that they would not give up on using RB

5. **Engage parents in RB activities**
    - Provide a link on school's website, such that parents can easily access the platform with their children
    - Host a small workshop for parents regarding the benefits of parent-child paired reading
    - Offer RB as an option in the above activity

Obstacles in RB promotion

1. **Students' busy schedules**
    - This might be a difficult obstacle to overcome. However, if students can experience and understand the joy of reading and parents can understand the importance of developing reading at a young age, it is likely that more free time from students' schedules would be made available for enjoyable reading.

2. **Unavailability of tablet/ computer use (parents' restrictions and financial concerns)**
    - Parent-oriented workshops will help parents understand the importance of reading and its related activities, hopefully lifting certain parent-imposed-restrictions on children's electronics usage regarding RB or reading-related activities
    - School support in increasing the number of tablets and computers available for student use during recess can assist students with poor financial backgrounds
3. **Lack of interest/ exhaustion of suitable books**
    - 14 student-written e-books are newly available on RB
    - RB will continue to expand the quiz bank and e-books available