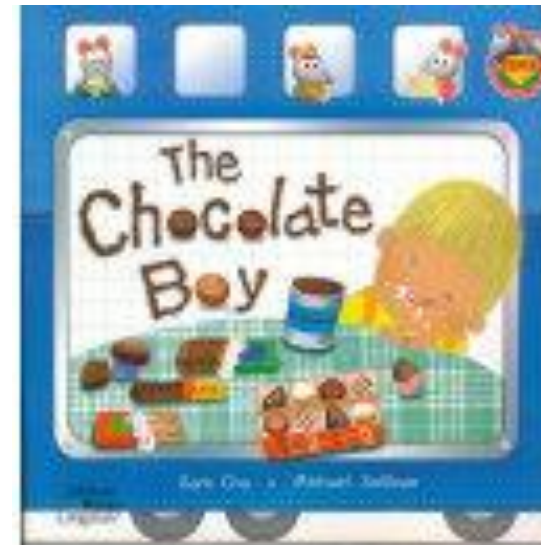
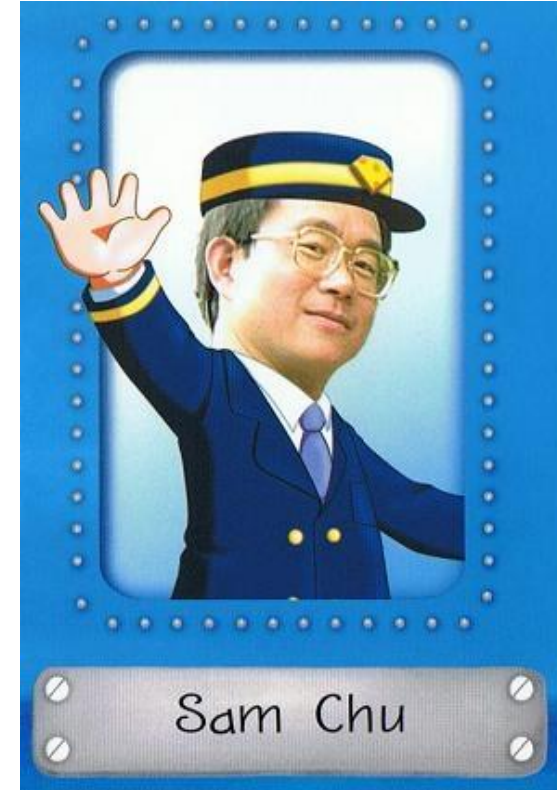


# Knowledge Exchange Seminar: Designing a research with profound practical impact

Dr Sam Chu

Division of Information & Technology Studies,  
Faculty of Education  
27<sup>th</sup> September, 2016

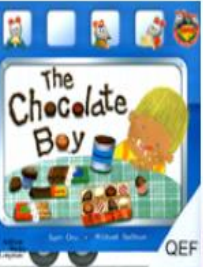
Dr Sam Chu received the KE Award 2016 for the project “Reading Battle: Enhancing Students’ Reading Interest and Ability with a Gamified, Self-paced, Interactive Children Literature e-Quiz Platform” from the Faculty of Education





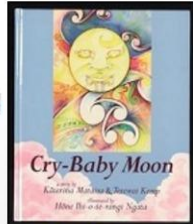
# Reading Battle ([quiz.cite.hku.hk](http://quiz.cite.hku.hk)): Enhancing students' reading interest and ability with a gamified, self-paced, interactive children literature e-quiz platform (Feb 2014-)

## Children Stories:



**The Chocolate Boy**  
 Author: Sam Chu, Michael Sullivan  
 ISBN: 9789880024740  
 Publisher: Addison Wesley Longman Ltd  
 Book ID: 4001  
 Reading Level:   
 Start Battle

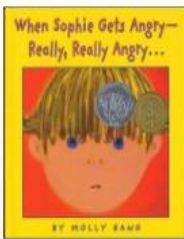
★★★★☆  
156 vote(s)



**Cry-baby moon**  
 Author: Katerina Mataira  
 ISBN: 0-908606-80-X  
 Publisher: Mallinson Rendel and Ahuru Enterprises  
 Book ID: 2104  
 Reading Level:   
 Start Battle

★★★★☆  
163 vote(s)

Award: White Ravens, 1993



**When Sophie gets angry--really, really angry**  
 Author: Molly Bang  
 ISBN: 0-590-18979-4  
 Publisher: The Blue Sky Press  
 Book ID: 2101  
 Reading Level:   
 Start Battle

★★★★☆  
595 vote(s)

Caldecott Honor (2000) & more

Reading Battle 閱讀大挑戰

[Battle](#)
[Result](#)
[Ranking](#)
[Profile](#)
[Report](#)
[Contact](#)

歡迎: Teacher  
[中文](#) [Logout](#)

Look for your book to start a battle!

Search Title, Author, ID or ISBN

e-books

\* Must books need to be borrowed from the library. Only 30 e-books can be accessed from the e-books section.

Battle

Chinese Books English Books



Collections

[Science](#)
[History](#)
[Folklores](#)
[Fairy Tales](#)
[Biographies](#)
[Fables](#)

[Non-fiction](#)
[Fantasy](#)
[Fiction](#)
[Detective Stories](#)
[Picture Books](#)

**First Battle**

You can try up to 3 battles (Only the highest score counts!). You will lose 10% of the total points in the 2nd battle and 20% in the 3rd battle. So please read the book carefully before going for a battle. Within each battle, you can attempt each question up to 2 times. You get half of the points if you get it right the second time.

Confirm

Reading Battle: [quiz.cite.hku.hk](http://quiz.cite.hku.hk)

User Name	Password
test1	password

# Summary of Impact - 1

My research in IT in education (game-based learning and gamification in particular), school librarianship and reading have led to the development of Reading Battle (RB), an innovative online platform that has been used by over 50 primary schools and kindergartens in Hong Kong, and schools/library in Taiwan, Mainland China and the USA.

- RB helps enhance students' interest in reading and strengthen their ability in comprehension through an innovative *gamification* pedagogy (Chu, 2015).
- RB has been implemented in 32 Hong Kong primary schools and 11 kindergartens.
- RB used in 2 Taiwan primary schools and 3 U.S. kindergarten/public libraries have stimulated children's reading interest and ability.

## Summary of Impact - 2

- Many students who had no interest in reading in the past have now been excited by RB and have become excellent readers.
- 94% of the participating students in a school agreed that RB was effective in improving their reading comprehension skills (Chan et al., 2015).
- Participating students in RB in the U.S. did not experience a “Summer Loss” and top 3 students increased their reading ability 10-60% (Chu, 2016b).
- A Taiwanese parent whose child participated in RB shared her thought on Facebook:

「小五的暑假英文閱讀大挑戰(reading battle)激起了這幾位從小一起長大的孩子們鬥志，去圖書館借書，各自在家閱讀、線上作答，再互相分享、推薦有趣的書本，這種感覺真棒呀！也令人好羨慕這種純真的友誼。」  
( “The English Reading Battle was the summer assignment of my P.5 child. It has inspired my child and friends who have been studying together since P.1 to learn together. They started to borrow books from the library, read at home, do the RB quests, share with friends and recommend books for each other. This makes me feel really great and I am even jealous of their pure friendship!” ) (Chu, 2016)

# Underpinning Research – quality of knowledge - 1

- In the past 10 years, I have engaged in 37 projects and 147 publications exploring **how technology can enhance learning** (<http://web.edu.hku.hk/staff/academic/samchu>).
- Besides my general research on enhancing learning with technology, the RB project draws on my experience from another highly successful project that applies **game-based learning in providing students with sex education**. This project has resulted in 2 journal articles (Kwan et al., 2015; Chu et al., 2015) and 5 conference papers.
- The RB project also draws on my research expertise on **school librarianship** and on the collaborative teaching pedagogy of school librarians and teachers in **improving student's learning (eg. reading interest & ability – Chu et al., 2011)**. I have published 2 journal articles (including **an award winning article – Chu, 2009**), 2 books (Chu et al., in press; Chu et al., 2012), 8 conference papers and 6 other articles/ papers in this research area.
  - Chu, S.K.W. (2009). Inquiry project-based learning with a partnership of three types of teachers and the school librarian. *Journal of the American Society for Information Science and Technology*, 60(8): 1671-1686. **[Early Career Research Output Awards 2010]**
  - Chu, S.K.W., Reynolds, R.B., Tavares, N.J., Notari, M., & Lee., C.W.Y. (in press). *Developing 21st century skills with inquiry learning, collaborative teaching, social media, and games: International perspectives*. Springer.





# Underpinning Research – quality of knowledge - 2

- [RB](#) is a multidisciplinary project that requires expertise from various knowledge domains including IT in education (especially gamification and game based learning), collaborative teaching pedagogy (especially between school librarians and teachers), reading process and assessment, and children literature.
- For the 8 years before the conception of RB, I have been involved in many projects as the PI, from which I developed a wealth of expertise in related areas that lead to the creation of RB. **I've worked with collaborators in various related fields:** with Dr Alvin Kwan on game based learning; with Mr Peter Warning on school librarianship; with Prof SK Tse on reading process and assessment; and with Ms Nicole Travers on English writing with technology. I continued to work with SK and Nicole in conceiving/managing this multi-disciplinary project. I also brought in Dr Dana Dukic who has been a teacher librarian in both primary and secondary schools and has done research on an e-quiz platform for engaging students with reading.





教育局  
Education Bureau

# Underpinning Research – collaboration with other institutions



香港學校圖書館主任協會  
Hong Kong Teacher-Librarians' Association



HONG KONG  
DIGITAL GAME-BASED LEARNING  
ASSOCIATION  
香港數碼遊戲為本學習協會

- Hong Kong Teacher Librarian Association (HKTLA): **strategic partner in the RB project**. Many of their Committee members met with me to help me conceive this project. Their various members continued to work with me in different capacity – their former president worked as a part-time Education Officer to help work with librarians and teachers in schools. Their current president help promote RB in various occasions.
- Education Bureau (EDB): I conducted **a consultancy project for EDB to evaluate the role of TLs** in public sector schools. Through interviewing TLs, I gained a good understanding of their work and formed an excellent relationship with them. This make RB receptive to the TL community.
- Fifth Wisdom Ltd: Programming and design of the RB platform was executed by the company. Mr Frankie Tam, CEO of Fifth Wisdom, is the Chairman of HK Digital Game-Based Learning Association. He has been working with me on 2 game-based learning and gamification projects. For the 1<sup>st</sup> project on game-based learning for sex education, he and his colleague worked as volunteers in providing graphic designs for the game. **They offered me a free service as they found it a very meaningful project for teenagers!** The 2<sup>nd</sup> project is designing RB as a contractor.
- Quality Education Fund: I obtained a funding of HK\$2,846,000 for the RB project.
- **FifthWisdom:**



# Underpinning Teaching & Learning - 1

Through teaching the course Literature for Young People in a Digital Age (MLIM 6202) for a number of times in the past 10 years, I've become an expert in children literature:

- **Having a good understanding of different genres of children literature.** The individual assignment of the course is about evaluating children literature so I become very familiar with evaluating children literature.

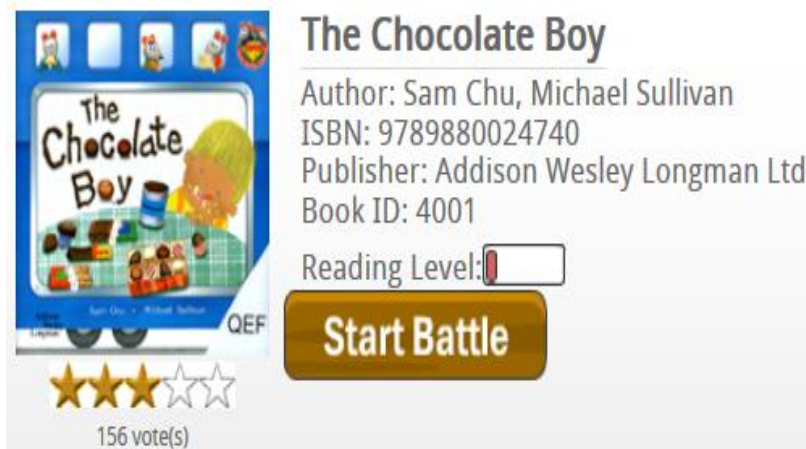
## Collections



- **Knowing how to engage students with children literature.** I've guided many students on their group project of creating a children story book over the years and became good at it. This was part of the reason why I became a children story author and have published 8 children stories with Pearson Longman.

# Underpinning Teaching & Learning-2

- Understanding how to use children literature to help students develop their reading interest & ability. Some of the students' group projects contain questions about the stories they've created. I learned from my students (who are mainly librarians & teachers) that their target audience (many were primary students) enjoyed their stories as well as the questions asked. This became part of the inspiration for creating RB that contains carefully crafted questions for a great variety of children literature.



# Underpinning Research – innovativeness - 1

Gamification of reading experience and assessment to make the process enjoyable:

- In general, students dislike tests, but the competition elements (via ranking) and e-badges on RB gamify the reading assessment. It **“turns something boring into something fun!”**
- Before students can engage in tests on RB, they have to read. This promotes reading. RB has motivated hundreds of students in different parts of the world who didn't like reading, but are now reading A LOT MORE! This works particularly well for boys as they enjoy competitions.
- Test questions are well-crafted based on the PIRLS framework (Mullis et al., 2009) and Bloom's taxonomy.

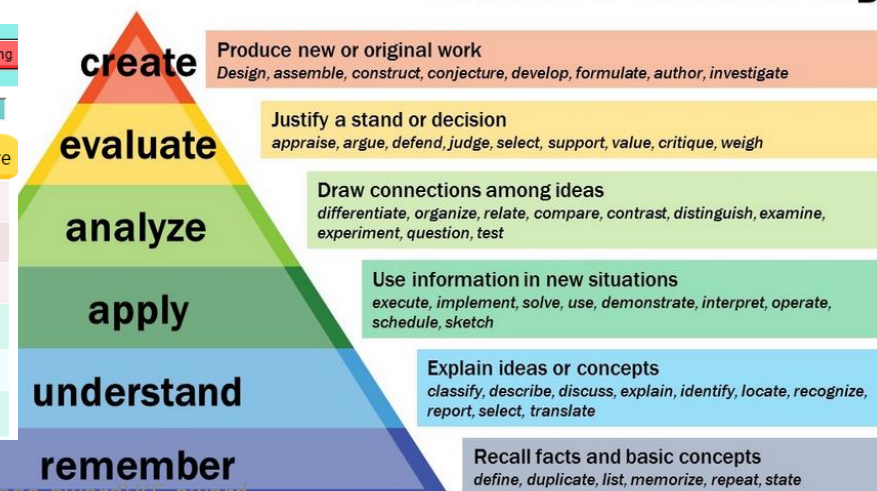


## PIRLS 2011 assessment framework

- Information retrieval
- Making inferences
- Interpret and integrate ideas
- Evaluation

## Bloom's Taxonomy

(First 100 users with average score ≥80 will be listed)					
All school forms		All classes	Inter-school Form	without average score < 80	All books
Name	Class	School	Total score	No. of books	Avg score
1 YAN HOI CHING	P2D	Sacred Heart Canossian School	36909	382	97
2 TSE HOI TUNG	P3E	Lam Tin Methodist Primary School	35235	362	97
3 LI HOI CHING	P3E	Lam Tin Methodist Primary School	32839	351	94
4 TANG HOI KI KYLE	P2B	Lam Tin Methodist Primary School	32001	340	94
5 MAK EUNICE	P5E	Lam Tin Methodist Primary School	29297	320	92
6 TSANG HO KONG	P3A	St. Patrick's School	24869	305	82



X:\faculty\knowledge exchange award\KE award

# Underpinning Research – innovativeness - 2

- **Relieves teachers' workload** of monitoring and assessing reading ability using time-consuming methods (e.g. comprehension worksheets). RB provides scaffolding support by offering a hint when students answered incorrectly. When a question has been answered, RB provides immediate feedback to students.
- **Caters for learning diversity** – Students can read books and answer questions on RB at their own pace. Students who can excel can get into the Life/Term Score Ranking. Students who can't excel may still be excited by having a chance to be listed on the Improvement Score Ranking (拔尖, 補底)
- Based on the reading profile in RB for each child, librarians, teachers and parents can make use of the data to help children develop in areas they are weak at.

Inter-school Form Improvement Score Ranking

(First 100 users with term score exceeds term score of last term, having read >10 books, with average score ≥80 will be listed)

All school forms

All classes

Inter-school Form

without average score < 80

Last term starts from 2015-09-01 to 2016-01-31.

This term starts from 2016-02-01 to 2016-06-30.

	Name	Class	School	Improvement score	Last Term Score	Term score
1	CHO TSZ YAN	P2B	Sacred Heart Canossian School	6140	1491	7631
2	Ng Chak Ki	P4A	Ho Lap Primary School	5282	1979	7261
3	SHER Tsz Him	P2E	Yan Oi Tong Tin Ka Ping Primary School	4371	3111	7482
4	LEE KA CHUN	P4A	Cheung Chau Sacred Heart School	3824	758	4582
5	YEUNG SIN YAN	P5B	Tung Wah Group of Hospitals Tang Shiu Kin Primary School	3340	196	3536
6	Leung Chun Ho	P5B	Ho Lap Primary School	2937	342	3279
7	KI CHEUK YIU	P3E	S.K.H. Yan Laap Primary School	2847	182	3029

Summary:

Score

Life score  
5618  
(Avg. 62)

Term score  
192

Completed Books

0  
18  
14  
20  
28  
11  
0

Total 91

Badges

Over 90  
x11

Over 80  
x12

Over 70  
x20

Accuracy by Question Type

Information Retrieval 68%

Making Inferences 67%

Integrate Ideas and Making Interpretation 71%

Evaluation 66%

Details:

Books	Trial Scores			Best Score	School Average	World Average
	1st	2nd	3rd			
漫畫科學探險隊:超光速宇宙大進擊				75	75	62
Abu Ali Counts His Donkeys				71	71	57
寂寞的天才,達文西之謎		46		46	46	55

## Provides immediate feedback

Q.5

Q.6

Q.7

Q.8

Q.9

Q.10

What does the picture below show?



a. A type of animals.

b. A piece of plastics

c. A group of eels

d. A type of plants

Explanation: Sponges are animals that look

Colourful Coral Reefs

Q.5

Q.6

Q.7

Q.8

Q.9

Q.10

What does the picture below show?



a. Flowers in the sea

b. Sea anemones

c. Sponges

d. Eels

Hint: p.11

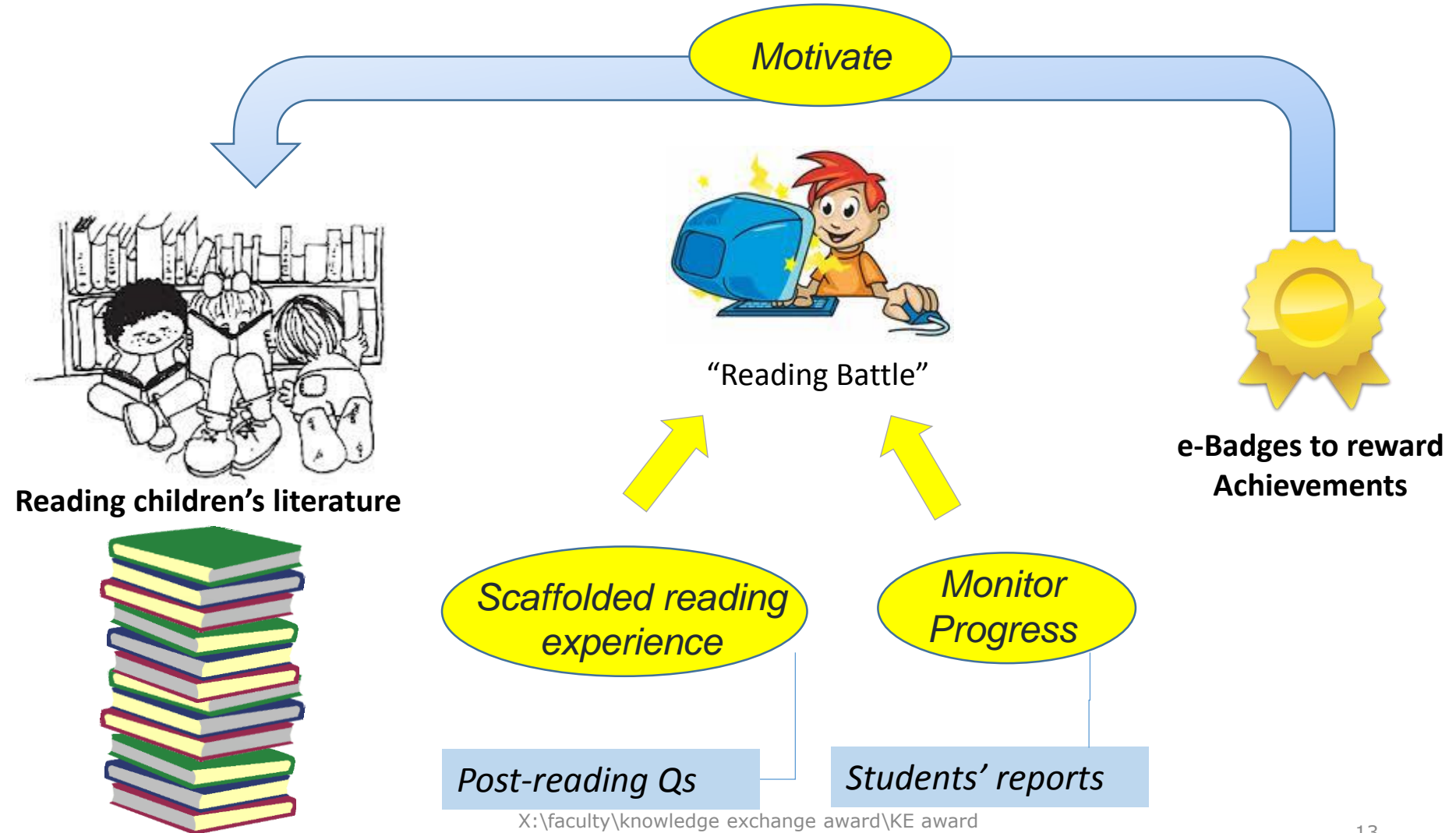
Try Again



# Underpinning Research – innovativeness - 3

In Reading Battle, every child can be a WINNER!

Motivate-Scaffold-Monitor(Wu et al., 2014)





# Impact by Engagement – External partners:

## over 50 schools/ libraries in total

### Hong Kong (6 of 32 primary schools)

1. Ho Lap Primary School (sponsored by Sik Sik Yuen)
2. Toi Shan Association Primary School
3. Xianggang Putonghua Yanxishe Primary School of Science & Creativity
1. Chinese Y.M.C.A. Primary School
2. Lam Tin Methodist Primary School
3. King's College Old Boys' Association Primary School No. 2

### Hong Kong (2 of 11 kindergartens)

1. Tang Bik Wan Memorial Kindergarten
2. Tin Ka Ping Kindergarten

### Taiwan (2 primary schools)

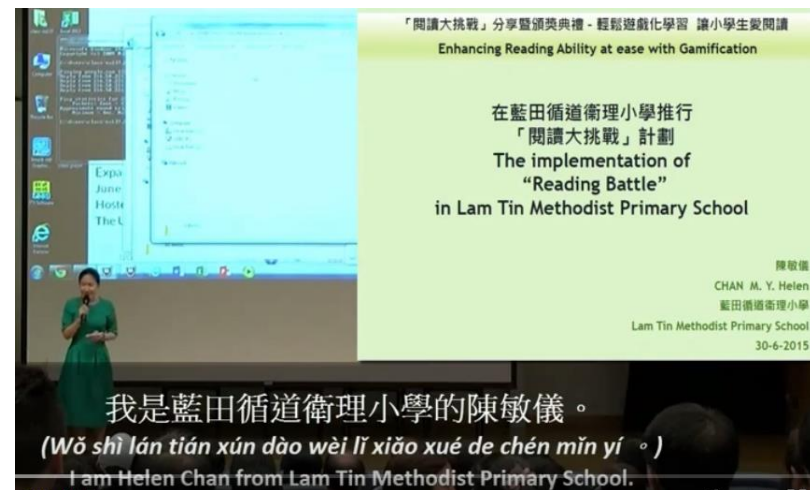
Keelung Municipal Ren-Ai Primary School  
 Taipei Municipal Wanxing Elementary School

### The US (1 kindergarten, 1 public library)

Bright Horizons  
 North Miami Beach Public Library (summer program)

### Mainland China (1 primary school)

Zhonghua Road Primary School



Lam Tin Methodist Primary School



Photos courtesy of: Florida Library Association 'Prevent the Summer Slide' Program Hernandez, E., Chu, S. & Hong, H. (2015)

# Engagement: teacher librarians

- Worked with 3 TLs (2 retired and 1 current) to work part-time on the project to help build RB together – catering for the needs of TLs, teachers and students, for example, deciding on the different levels of the Chinese and English book titles.
- Co-presented with TLs (also brought in students, parents, and teachers to share their experience) at the following occasions:
  - International Education Technology Conference (2014, 2015, 2016)
  - CITE Research Symposium (2014, 2015)

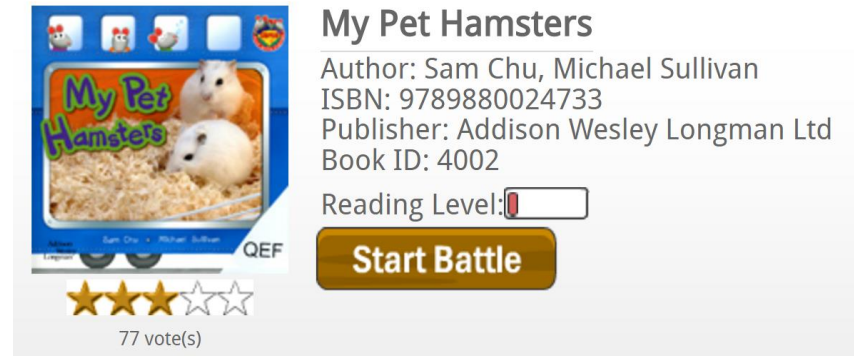
Level of English Titles in Reading Battle				
Level	Type	Description	Illustration Ratio	# of Pages
1	Picture books	Simple words, repetitive, pop-up books; large spacing; predictable verses; simple sentence, 3D cover; <20 words a page	~4:1	<20
2	Picture books	Longer sentences; higher sentence complexity; 3D cover; games; 20-29	3:1	20-29
3	Simple chapter books	Involves story line, 30-39 words a page	2:1	30-39
4	Subject-based non-fiction	Involves higher level of thinking; few illustration support; small print size and spacing; 40-49 words a page	-	40-49
5	Chapter books	Include biography; pictures only in selected pages; higher level of concept load; 50-60 words a page	-	50-60



Source: [https://www.youtube.com/watch?v=t-\\_Inbk4PuE&feature=youtu.be](https://www.youtube.com/watch?v=t-_Inbk4PuE&feature=youtu.be)

# Engagement: innovativeness - Drawing on wisdom of the crowd - 1

- **Selecting books with stakeholders at Hong Kong Book Fair:**
  - RB needs to contain books that excite students.
  - A collection of over 500 books was developed by the HKU team advised by TLs, teachers, parents, and students:
    - In summer 2014, several trips were organized to the HK Book Fair so that students, teachers, TLs, and the project team could select books for the collection.
    - The process enabled us to draw on the wisdom of various stakeholders in discovering good books. **It was a fun and enjoyable evening**, and it was also an effective promotion of RB.
- **“Worm catcher”** draws on the wisdom of various users to help identify problems of RB. **Many students paid great attention when using RB (& also in their reading) to help ‘catch worms’!**



Worm Catcher

My Pet Hamsters

Please fill out the form below to report problems in the question (can be about the question, answer choices, or images).

What was the colour of daddy and mummy hamsters?

- ☒ a. White
- ☐ b. Green
- ☐ c. Yellow
- ☐ d. Pink

What is this problem about?

- ☐ Others
- ☐ Book title mismatch
- ☐ Problem in the question
- ☐ Problem in some of the choices
- ☐ Problem in display
- ☐ Image not displayed

Please explain the problem that you are reporting...

Your email address:

Submit Cancel

# Innovativeness in the Engagement Approach – Participatory Design

- The project involved **collaboration between the project team (children story author, gamification expert, reading researchers), teacher librarians, teachers, game developers, parents, and students.**
- Books were chosen from award-winning titles. Also, the project team went to book fairs with students, parents, and teachers to select books.
- At schools, teacher-librarians and teachers collaborated to create cross-curricular reading programmes with interesting reading materials.
- Feedback was collected from stakeholders to fine-tune the platform on an on-going basis.

General coverage
Welcome recommendations by teachers
Encompass a variety of genres (e.g. fiction, fairy tales, folklores, biographies, science, history, fables)
Divided into 5 levels of reading difficulty

## School-based titles

Covers P1-P4

Titles submitted by teachers

Each school has a quota of 30 titles

Levels	Chinese	English
P1	17	61
P2	53	84
P3	75	80
P4	63	37
P5	24	22
total	232	284

Over 500 titles in the system now!



# Impacts Achieved: Hong Kong primary schools - 1

- The RB game played individually has helped hundreds of students to improve their reading interest/ability, as acknowledged by both students and parents (Wu et al., 2014) (see photos below)
- RB has been heavily reported: 6 newspaper article coverage from 2015.
- RB was also included in 2 self-funded KE seminars organized by Academy 22.



Source: HKET. 2015.7

Reading Battle 閱讀大挑戰

We will give out the following awards at the end:

- Top 10 Worm Catchers
- Top 10 Lido scorers
- Top 40 Term scorers
- Top 40 Most improved scorers

Inter-school Form Life Score

(First 100 users with average score >80 will be awarded)

	Name	Class	School	Score	Improvement
1	MAK EUNICE	P5E	Lam Tin Methodist Primary School	22822	243
2	TSE HOI TUNG	P3F	Lam Tin Methodist Primary School	21577	230
3	PANG SHUN LAP	P5A	Lam Tin Methodist Primary School	20619	254
4	LI HOI CHING	P3E	Lam Tin Methodist Primary School	18109	192
5	TSANG HO KONG	P3A	St. Patrick's School	18015	186
6	TANG HOI KI KYLE	P2B	Lam Tin Methodist Primary School	18015	186
7	YAN HOI CHING	P2D	Sacred Heart Canossian School	18015	186



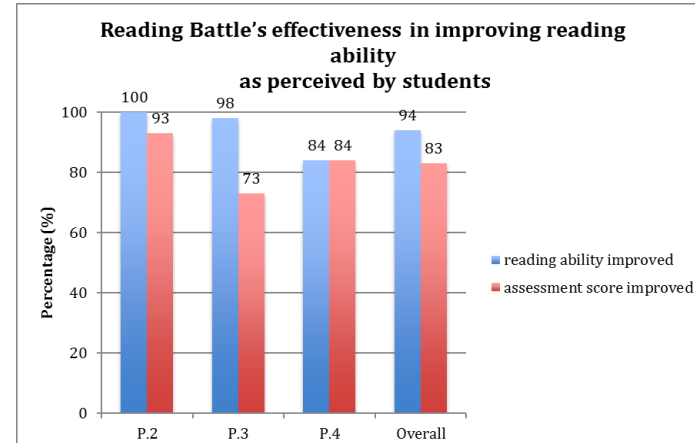
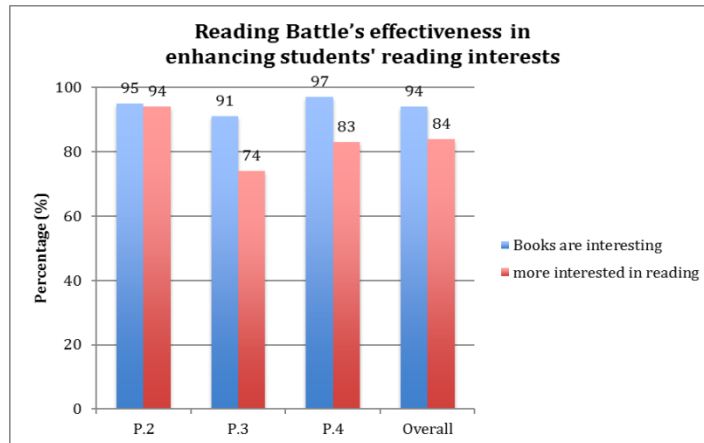
Source: <https://www.youtube.com/watch?v=XtoSScntDIU&feature=youtu.be>

Source: [https://www.youtube.com/watch?v=t-\\_lnbk4PuE&feature=youtu.be](https://www.youtube.com/watch?v=t-_lnbk4PuE&feature=youtu.be)



# Impacts Achieved: Hong Kong primary schools - 2

- 94% of the students agreed that Reading Battle was effective in improving their reading comprehension skills (Chan, Chu, Mok, & Tam, 2015). The effect was the most obvious among top performers, followed by students who improved the most (Chu et al., 2015).
- 84% of students thought that RB enhanced their interest in reading, and 94% of students considered the children literature collection in Reading Battle interesting (Chan et al., 2015).
- Students in Lam Tin Methodist Primary School voted RB as a Top 10 Website 3 years in a row!



**Comparing students' interest in reading (Chu et al., 2015)**

Reading interest	Top performers (n=33)		Bottom performers (n=14)		Most improved (n=6)		Sig. Kruskal-Wallis
Survey question	Mean (SD)	Median	Mean (SD)	Median	Mean (SD)	Median	
2. I like reading. <sup>a</sup>	3.36 (.60)	3.00	3.14 (.66)	3.00	3.17 (0.75)	3.00	.52
30. I like reading more after using Reading Battle. <sup>b</sup>	3.31(0.74)	3.00	2.58 (1.00)	3.00	3.17 (0.98)	3.50	.062

Notes:

<sup>a</sup> Ratings are based on a 4-point scale: 4 – "very much so", 3 – "quite a lot", 2 – "just a little", 1 – "not at all"; Mid-point = 2.5.

<sup>b</sup> Ratings are based on a 4-point Likert-type scale: 1 – "strongly disagree", 4 – "strongly agree"; Mid-point = 2.5.

# Impacts Achieved: Hong Kong primary schools - 3

Effect of RB on English Assessment (2013-2014 Term 2) between academically strong and weak groups							
English mixed grouping		E.Reading_T2A3	E.Dictation_T2A3	E.Listening_T2A3	E.Speaking_T2A3	E.Writing_T2A3	E.FullMark_T2A3
AC(Strong) & RB(strong)	Mean	90.33	29.78	17.89	19.33	29.11	186.44
	N	9.00	9.00	9.00	9.00	9.00	9.00
	SD	6.80	0.67	1.69	0.71	1.17	9.00
AC(Strong) & RB(weak)	Mean	87.90	29.30	17.30	18.70	28.40	181.60
	N	10.00	10.00	10.00	10.00	10.00	10.00
	SD	10.58	1.06	2.79	2.11	1.65	13.87
AC(weak) & RB(weak)	Mean	66.06	18.41	12.35	13.24	26.35	136.41
	N	17.00	17.00	17.00	17.00	17.00	17.00
	SD	15.05	8.75	4.00	4.87	2.80	28.37
AC(weak) & RB(strong)	Mean	76.67	24.67	13.67	17.33	28.67	161.00
	N	3.00	3.00	3.00	3.00	3.00	3.00
	SD	5.51	8.39	3.79	2.31	1.53	18.00
Total	Mean	78.08	24.31	15.00	16.36	27.69	161.44
	N	39.00	39.00	39.00	39.00	39.00	39.00
	SD	16.09	8.09	4.07	4.40	2.42	30.88

# A study that examines the top 20 students from each of the 3 rankings of Reading Battle

- One-to-one interview with 39 students
- Those students selected were interviewed during their lunch time with the help of teacher librarians of each primary school.
- Researchers did the interview according to the interview protocol.
- Each interview lasted for around 20 minutes.

# Impacts Achieved: Hong Kong primary schools - 5

Q1: Does Reading Battle **change your reading habit?** (Reading mode, reading frequency, choice of books, self-initiative and independency in reading, etc.)  
Follow-up question: How have your reading habits changed? Please explain.

**Table 1 Changes in students' reading habits**

Domain	Items	Students (n=37)
Changes in students' reading habits	Change in reading mode	8 (22%)
	Change in selection of books	22 (59%)
	Enhance reading frequency	25 (68%)
	Enhance reading independency	6 (16%)
	Enhance reading initiative	9 (24%)

Note: 35 out 37 (95%) students gave their answers about their changes in reading habits. One student could have changes in reading habits for more than one category, thus the total percentage could sum up to more than 100%.

# Impacts Achieved: Hong Kong primary schools - 6

## Students' feedback on selection of books and reading frequency

- **Change in Selection of books:**

- “I used to read more Chinese books. Now I read English ones too. And I will choose to read some more difficult books now.”
- “I **used to read more comic books**, but **now** I will read books **with more texts like novels**.”

- **Change in Reading frequency:**

- “**Before Reading Battle** I think I have only read around **10 books**. **Now** I have read **around 200 books**.”
- “In the past I only very few books, like 2-3 each week. Now I read 6-7 books each week.”



## Impacts Achieved: Hong Kong primary schools - 7

Q3: What parts (**content, features and functions**, etc.) of Reading Battle do you like?  
Follow-up question: Why do you like these parts?

**Table 2** Parts of Reading Battle that students like

Domain	Items	Students (n=37)
<b>General Evaluation Parts of RB that students' like</b>	Contents	13 (35%)
	Features	13 (35%)
	Functions	15 (41%)

Note: 33 out of 37 (89%) students gave their answers about what parts of Reading Battle that they liked. Since one student could like more than one part in Reading Battle, thus the total percentage could sum up to more than 100%.

# Students' feedback on the parts they like in Reading Battle

- **Contents:**
- “The **books** on Reading Battle are **wonderful** and the **range** is **wide**. For example, there are books about sports, academic and also philosophy. The wide range of choice enables me to read books outside my habit and thus I obtained more knowledge.”
- **Features:**
- “I like the **ranking tables** because I can see how many battles I have finished and how many books I have read.”
- **Functions:**
- “I love the fact that we have **3 chances in answering the questions** regarding the content of the book. Even if we are not familiar with the content of the book when answering the questions for the first time, we can read it again, hereafter we can re-do the task in order to understand more about the book.” **25**

# Impacts Achieved: Hong Kong primary schools - 9

Q4: Did you **improve academically** in the past year? (If yes, in which area? Reading, writing, Chinese, English, General Studies, etc.)

Q5: Is your academic improvement owed to the use of Reading Battle or other methods?

Table 3 Aspects of students' academic improvements and the reasons behind

Domain	Sub-domain	Items	Students (n=37)
Aspects of students' academic improvements and the reasons behind	Aspects of improvements	Chinese-Reading	14 (38%)
		Chinese-Writing	17 (46%)
		Chinese-Vocabulary	6 (16%)
		English-Reading	12 (32%)
		English-Writing	12 (32%)
		English-Vocabulary	4 (11%)
		General studies	4 (11%)
	Reasons for improvements	Using Reading Battle	16 (43%)
		Other methods	4 (11%)
		Both	11 (30%)
Total		31 (84%)	

Note: 34 out of 37 (92%) students thought they had academic improvements during the last year and 31 out of 37 (84%) students gave the reasons for their improvements. For the aspects of improvements, one student could have improvements in more than one aspect, thus the total percentage of this part could sum up to more than 100%.

## Impacts Achieved: Hong Kong primary schools - 10

### Students' feedback on their academic improvement as well as its reasons

- “My Chinese reading improved a lot. Normally I get grades around C and B range but now it's always A.”
- “The results of my Chinese exam has increased from 80 something to 90 something marks. It helps my reading because it trains me to read a large amount of books in a short period of time.”
- “My English and General studies have improved. I got 10 marks approximately. But now, I get around 90 marks.”
- “I reckon my improvement in academic studies is due to the fact that I use Reading Battle. Books in the Reading Battle are harder, so usually I would not be interested in reading them. But the moment when I saw the ranking list, I realize that if I could complete the harder tasks with all correct answers, the average scoring increases, which then motivates me to read more of them.”
- “My academic improvement is owned to the use of Reading Battle rather than other methods, because it showed the level for each book that let me know which book is suitable for me.”

Q2: Does Reading Battle motivate you to read more books? How did Reading Battle **motivate** you to read more books?

Q6: Which feature in Reading Battle motivated you most to read more?

Q7: What can you gain after completing new battles in Reading Battle?

Table 4: Motivations of students in using Reading Battle

Domain	Sub-domain	Items	Students (n=37)
Motivations of students in using Reading Battle	Extrinsic motivation	Affordance-Badges (awards)	5 (14%)
		Affordance-Leaderboard (ranking)	23 (62%)
		Affordance-Points (scores)	11 (30%)
		Affordance-Questions (function)	10 (27%)
		Affordance-Contents	8 (22%)
	Intrinsic motivation	Novelty (Curiosity)	13 (35%)
		Potential challenges	7 (19%)
		Sense of achievements	18 (49%)
		Sense of enjoyments	6 (16%)

Note: 35 out of 37 (95%) and 33 out of 37 (89%) students gave their answers of their extrinsic and intrinsic motivations in using Reading Battle respectively. One students could have more than one kind of motivation, thus the total percentage of each of these two parts could sum up to more than 100%.



# Students' feedback on extrinsic and intrinsic motivation

- Extrinsic motivation:
  - “In Reading Battle, ‘**Ranking List**’ is the most effective feature to motivate me to read more because it will list the result of top students and their ranking timely that provoke a **competition** among classmates. In such way, I will comprehend the book context more deeply in order to strive for the **better achievement**.”
  - “Yes. If I am scoring ten marks lower than others on the ranking list, I feel uncontended, as I want to surpass others and get to the first place.”
- Intrinsic motivation:
  - “I want to **learn more knowledge**.” --- Novelty (curiosity)
  - “Yes, sometimes the questions for the level 5 books are difficult but if I got them right, I will feel **a strong sense of success** and motivates me to try doing the battles for the **more difficult books with more texts**.”

Addressing Q7: What can you gain after completing new battles in Reading Battle?

Addressing Q8: After joining Reading Battle, has your understanding of characters' feelings and behaviors and the cause-effect relationship from the context of a book improved?

Addressing Q9: After joining Reading Battle, do you think you have become **more competent in reading**, especially on some challenging books?

**Table 5: Students' improvements in reading**

Domain	Items
<b>Reading Competency</b> Students' improvements in reading competency after using Reading Battle	Comprehension-Generative
	Evaluation [PIRLS]
	Inferences [PIRLS]
	Interpretation [PIRLS]

Note: 21 out of 37 (86%) students thought student could have more than one aspect of reading competency. Items could sum up to more than 100%.

#### Four Processes of Comprehension

- I. Focus on and retrieve explicitly stated information (e.g. recall sequence of events, character traits, making comparisons)
- II. Make straight forward inferences (e.g. inferring cause-and-effect relationships, outcomes)
- III. Interpret and integrate ideas and information across the text to provide (e.g. interpretations about characters' feelings and behaviours)
- IV. Examine and evaluate content, language, and textual elements, for example:
  - Interpret figurative language and abstract messages
  - Making judgement about the text comparing with external criteria
  - Making judgement about worth, desirability, acceptability
  - Identification with characters and incidents, e.g. how you would have reacted if you were the main character, or how would your mother feel if you decide to leave home and build a life of your own somewhere else?
  - Comparing the contextual changes taking place and the changes in the character over her lifetime

Adapted from Mullis, I. V., Martin, M. O., Kennedy, A. M., Trong, K. L., & Sainsbury, M. (2009). *PIRLS 2011 Assessment Framework*. International Association for the Evaluation of Educational Achievement. Herengracht 487, Amsterdam, 1017 BT, The Netherlands.

# Not only knowledge and ability, Reading Battle help students develop character

- “I learnt some principles that can apply in my daily life. Such as **Honesty**. That’s important in our daily life.”
- “For example in a book about interpersonal skills I have learnt **what not to do to other people** and **how to take care of others’ feelings**, etc.”

# Impacts Achieved: Hong Kong kindergartens

- i-FUN Reading (RB for kindergarteners), a pilot project was launched Feb, 2016
  - The top 10 performers in i-FUN answered questions for about 4-5 books/month.
  - They all achieved an average score >80%.

1	School	Form	English name	Total score	Average score	Complete book(s)
2	Tin...	K3	Leung...	2509	90	28
3	Che...	K3	Wong...	2334	47	50
4	Tam...	K3	Hung...	1926	96	20
5	Yic...	K3	Chung...	1503	94	16
6	Tam...	K3	Tsang...	1386	87	16
7	Tin...	K3	Ng...	1292	92	14
8	Po...	K3	Jim...	1108	92	12
9	Po...	K3	Chan...	1067	97	11
10	Tam...	K3	Ma...	1031	86	12
11	Mrs...	K3	Chung...	943	94	10
12	Tan...	K3	Chung...	860	86	10

- This pilot project is being conducted in 11 Po Leung Kuk (PLK) kindergartens. Preliminary results showed that students are excited about RB, and teachers/parents are satisfied that RB encourages students to read.
- Kindergarteners like it and they view it as a game. One said “The badges encourage me and make me happy”.
- One parent said: “We play the games together... It helps cultivate our relationship”.
- Another parent said: “The best part is that they have the motivation in doing it. They do it themselves, without force, without pressure”.



## Impacts achieved: A public library in the United States (Florida)

- “During the summer months, the majority of students will lose 10-30% of what was gained during the school year. Reading Battle participants did not experience a ‘Summer Loss’. Instead, they stayed on target or showed improvements.”
- “Our student participants increased their Reading Comprehension or remained on grade level, and also increased their confidence level in their ability to understand text. **Top 3 students increased reading abilities between 10-60%**” (Edenia M. Hernandez, Head Librarian, North Miami Beach Library).



North Miami Beach Library got district recognition at EdCom because of Reading Battle



X:\faculty\knowledge exchange award\KE award 2016

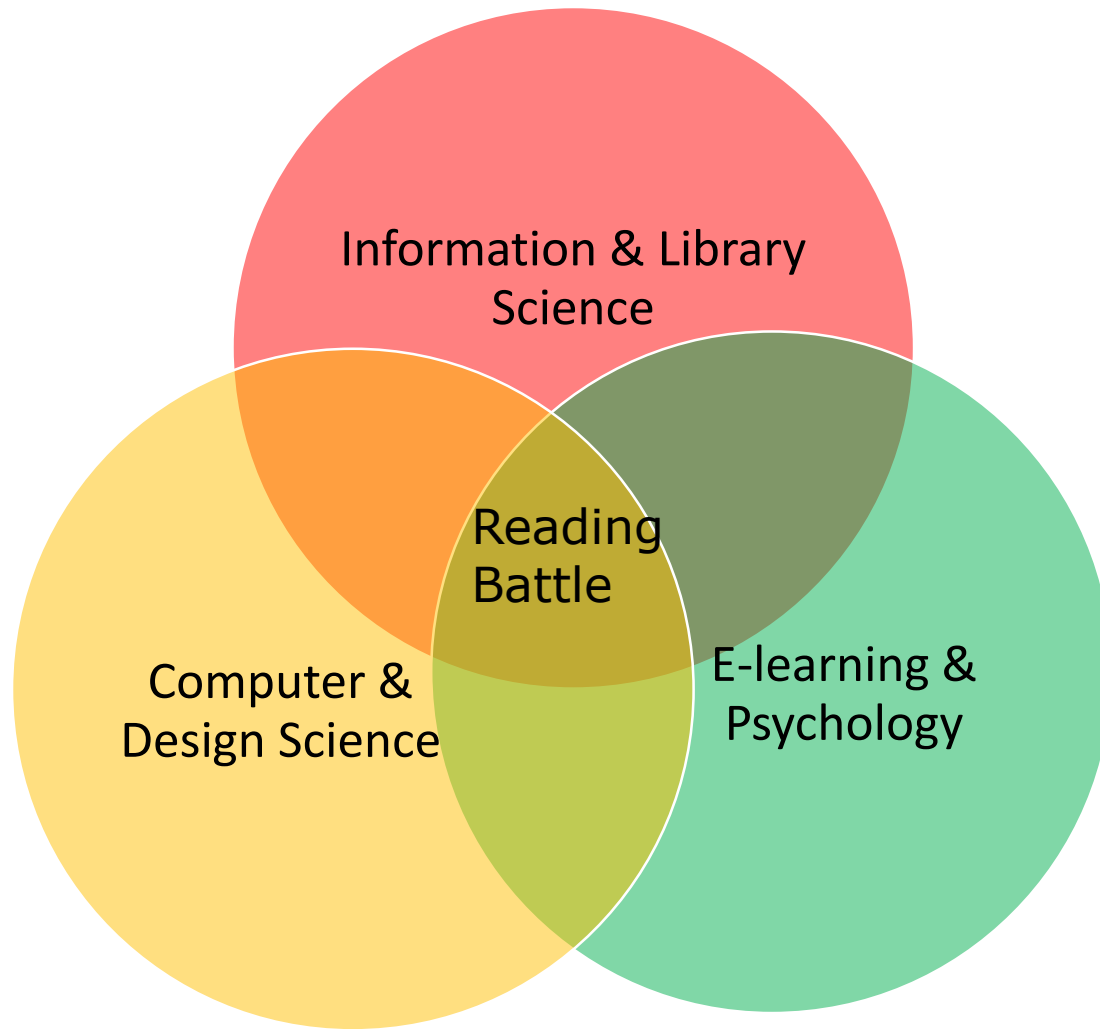


# Impacts achieved: Taiwan primary schools

- A Taiwanese teacher said in an interview that she noticed positive change in her students:

「以前同學都會告訴我：『老師，我真的很怕讀英文書。』用了閱讀大挑戰之後他們不再害怕，甚至開始喜歡英文書。」 (“My students used to tell me that they are really afraid of reading English books. After using Reading Battle they started to accept the challenge and even like to read English books now.” )





Reading Battle: Apply a multidisciplinary approach to help solve a critical issue in learning - Reading



# Gamification

## The Reading Battle

Contact me if you are interested

<http://equiz.cite.hku.hk>

User Name	Password
test1	password

- **Samuel Kai Wah Chu**, Ph.D. 朱啟華博士
- Associate Professor
- Head, Division of Information and Technology Studies
- Deputy Director, Centre for IT in Education
- Faculty of Education, The University of Hong Kong
- **E-mail: samchu@hku.hk**
- <http://web.edu.hku.hk/staff/academic/samchu>