

Effective use of gamification and game-based learning in education

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Part 1: Gamification in education

What is a Game?

What is Gamification?

A Project on Creating an E-quiz Bank

A Demo on the E-quiz Reading Battle

Motivate-Scaffold-Monitor Framework

4 Processes of Comprehension

Levels of Chinese / English Titles

Preliminary findings of the Project

What is a game (遊戲)?

■ What makes a game a game?

■ 3 basic characteristics

- A goal 目標
- Obstacles 障礙
- Competition 比賽

(Sarah Smith-Robbins, 2011)



Open Clip: <http://pixabay.com/en/darts-dart-game-bull-s-eye-target-155726/>; office.com clip art

What is gamification (遊戲化)? -1

“Gamification is the process of adding game mechanics (加入遊戲機制的過程) to processes, programs and platforms that wouldn't traditionally use such concepts. The goal is to create incentives and a more engaging experience (目的是引發動機和增加投入感). In other words, it's about fun” (Swan, 2012, p. 13).



Source: office.com clip art

What is gamification? -2a

Watch the section (2:30-4:40) of the video: [The Adventures of Tom Sawyer 2...](#)



Q1: What is gamification? -2b

- MC question: Select the answer from below.
從以下選出一個答案:
- (A). Tom “gamified” the painting work by giving points to those who could paint fast (給分子上油漆快的人)!
- (B). Tom “gamified” the painting work by giving badges to those who won the painting contest. (向贏了油漆比賽的人給予徽章)
- (C). Tom “gamified” the painting work into something that seemed interesting. (將油漆工作變得有趣)

Question form: <http://goo.gl/bGN6E0>



Creative common:

<http://www.flickr.com/photos/eafit/5631823543/>

What is **gamification**? -2c

- Tom is a master of gamification!

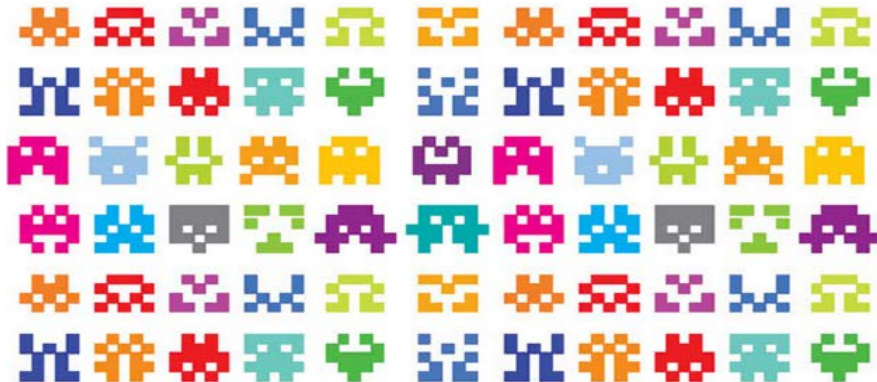
Gamification in education

EdTechReview | RESOURCES ▾ | NEEDS ▾ | VOICES ▾ | FOR ▾ | COM

7 Good Examples of Gamification in Education

NEWS Editorial Team 11 May 2013 | Hits: 89321 | 4 Comments | Share

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THE GAMIFICATION OF EDUCATION

Source: <http://edtechreview.in/news/324-examples-gamification-in-education>

KnowRe (Math learning):

<http://www.knowre.com>

Duolingo (Language learning)

<https://www.duolingo.com>

Gamification: Apply to reading

Strengthening students' reading
comprehension ability (both Chinese and
English) through developing children's
literature e-quiz bank on cloud

透過雲端兒童文學讀後測驗庫服務
加強學生的中、英文閱讀理解能力

Project Duration 計劃時段: May 2013 – Feb 2016

Funding Body 資助機構: Quality Education Fund 香港優質教育基金

Funding Amount 資助金額: HK\$2.86 million

Why this Quality Education Fund / QEF project? 香港優質教育基金

- Students who read well tend to perform well academically (Loh & Tse, 2009), therefore it is crucial to strengthen reading comprehension skills. 一般善於閱讀的學生都有好的學習成績, 因此加強閱讀能力是十分重要
- Some teachers sacrificed their recess to check on their students' reading progress. 有些老師犧牲了自己的小息時間, 來檢查學生的閱讀進度
- Grading reading comprehensive exercises for books is time consuming 教師需花費大量時間批改閱讀理解習作



Creative Common:

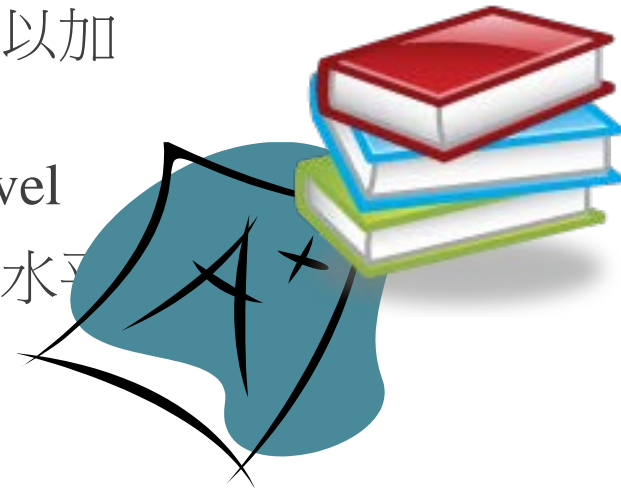
<http://www.flickr.com/photos/sanjoselibrary/5075675685/in/photostream/>

Project Goals 計劃目標



Source: office.com clip art

- Enhance reading interest & develop reading habit
提高閱讀興趣及培養閱讀習慣
- Strengthen reading comprehension ability through an engaging, fun, and interactive online e-quiz bank
通過加強引人入勝、有趣、互動的電子測驗庫以加強學生的閱讀理解能力
- Help teachers assess students' comprehension level
有助老師更有效地量度及分析學生的閱讀理解水平



Source: office.com clip art

System Demo 系統示範

The screenshot shows the login interface for the Reading Battle system. At the top left, there is a logo for "Reading Battle 閱讀大挑戰". At the top right, there is a language selection button labeled "English". A blue banner across the top right contains the URL "http://quiz.cite.hku.hk". Below the banner, the text "請先登入" (Please log in first) is displayed. The main content area features a large yellow box labeled "學生登入" (Student Login) with a sub-link "以香港教育城帳戶登入" (Log in with Education City account). Below this is a white box labeled "其他登入" (Other Login) containing fields for "帳號" (Account) and "密碼" (Password), and a "登入" (Login) button. A green speech bubble with the text "登入" (Login) points to the "學生登入" box. At the bottom, there is a footer with browser compatibility information and a cartoon illustration of a classroom with a chalkboard labeled "Reading Battle" and several animal characters.

Reading Battle 閱讀大挑戰

English

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

請先登入

學生登入

以香港教育城帳戶登入

其他登入

帳號

密碼

登入

登入

本網站只支援 Google Chrome, Firefox, Internet Explorer 11或以上的瀏覽器

Reading Battle

System Demo 系統示範

Reading Battle 閱讀大挑戰

挑戰 成績 排行榜 個人檔案 報告 聯絡

English 歡迎, wendy 登出



搜尋書本開始挑戰

Search by
book ID, ISBN, etc.

搜尋書名、作者、書本編號或ISBN

挑戰

館藏



科學



歷史



民間故事



童話



人物傳記



寓言



非小說類



幻想小說



小說



偵探小說



圖畫故事

你現在閱讀的書本是中文書還是英文書?

中文書籍

English Book

System Demo 系統示範

The screenshot displays the Reading Battle system interface. At the top, there is a navigation bar with the following elements from left to right: a logo for 'Reading Battle 閱讀大挑戰', a '挑戰' (Challenge) button with a clipboard icon, a '成績' (Results) button with a document icon, a '排行榜' (Ranking) button with a podium icon, a '個人檔案' (Profile) button with a cartoon bird icon, a '報告' (Report) button with a magnifying glass icon, and a '聯絡' (Contact) button with an envelope icon. On the far right of the navigation bar, there is a language selector set to 'English' and a '登出' (Logout) button. A user greeting '歡迎, wend' is visible in the top right corner.

Below the navigation bar, a cartoon rabbit character is holding a magnifying glass and a book. A speech bubble next to it says '搜尋書本開始挑戰' (Search for books to start challenge). Below this is a search input field with the placeholder text '搜尋書名、作者、書本編號或ISBN' (Search for book name, author, book number or ISBN).

The search results show '搜尋結果： 2008' (Search results: 2008). The first result is for the book 'Colourful Coral Reefs'. The book cover is shown on the left. To the right of the cover, the following information is displayed: 'Colourful Coral Reefs', 'Author: Thea Feldman', 'ISBN: 9780753433133', 'Publisher: Kingfisher', and 'Reading Level: 00'. Below this information is a 'Start Battle' button. A green speech bubble points to this button with the text 'Press 按下' (Press).

System Demo 系統示範 - 1

Reading Battle
閱讀大挑戰

Battle Result Ranking Profile Contact TSA 中文

First Battle

You can try up to 3 battles (only the highest score count). The 2nd battle will be penalized by 10% while the 3rd battle will be penalized by 20%. Please read the book thoroughly before attempting a battle. Within each battle, you can try each question up to 2 times. You get half of the points if you get it right the second try.

Confirm

- Do you agree with the following statements in regards to motivating students to use Reading Battle?
- Q2. Students should be allowed to try as many battles as they want to test their knowledge on a book . (T/F)
- Q3. Students should be allowed to attempt as many times as they want on a question. (T/F)

- Question form: <http://goo.gl/bGN6E0>


System Demo 系統示範

Progress Bar 進度

Colourful Coral Reefs

Progress indicators: 4 checked, Q5 (selected), Q6, Q7, Q8, Q9, Q10

What does the picture below show?



- a. Flowers in the sea
- b. Sea anemones
- c. Sponges
- d. Eels

Confirm



Instant feedback and prompts

即時評估及提示

Colourful Coral Reefs

✓ ✓ ✓ ✓ Q5 Q6 Q7 Q8 Q9 Q10

What does the picture below show?

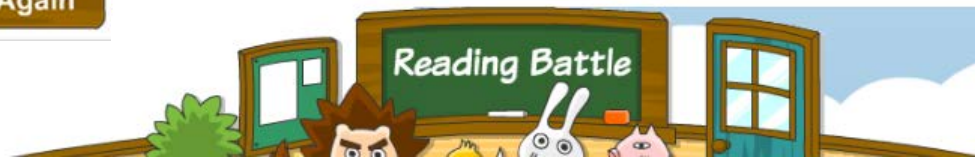


- a. Flowers in the sea
- b. Sea anemones
- c. Sponges
- d. Eels

Hint: p.11

2nd attempt
學生能補答

Try Again



Scaffolding Support

系統支援



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

Explain correct answer 為學生提供充分解釋

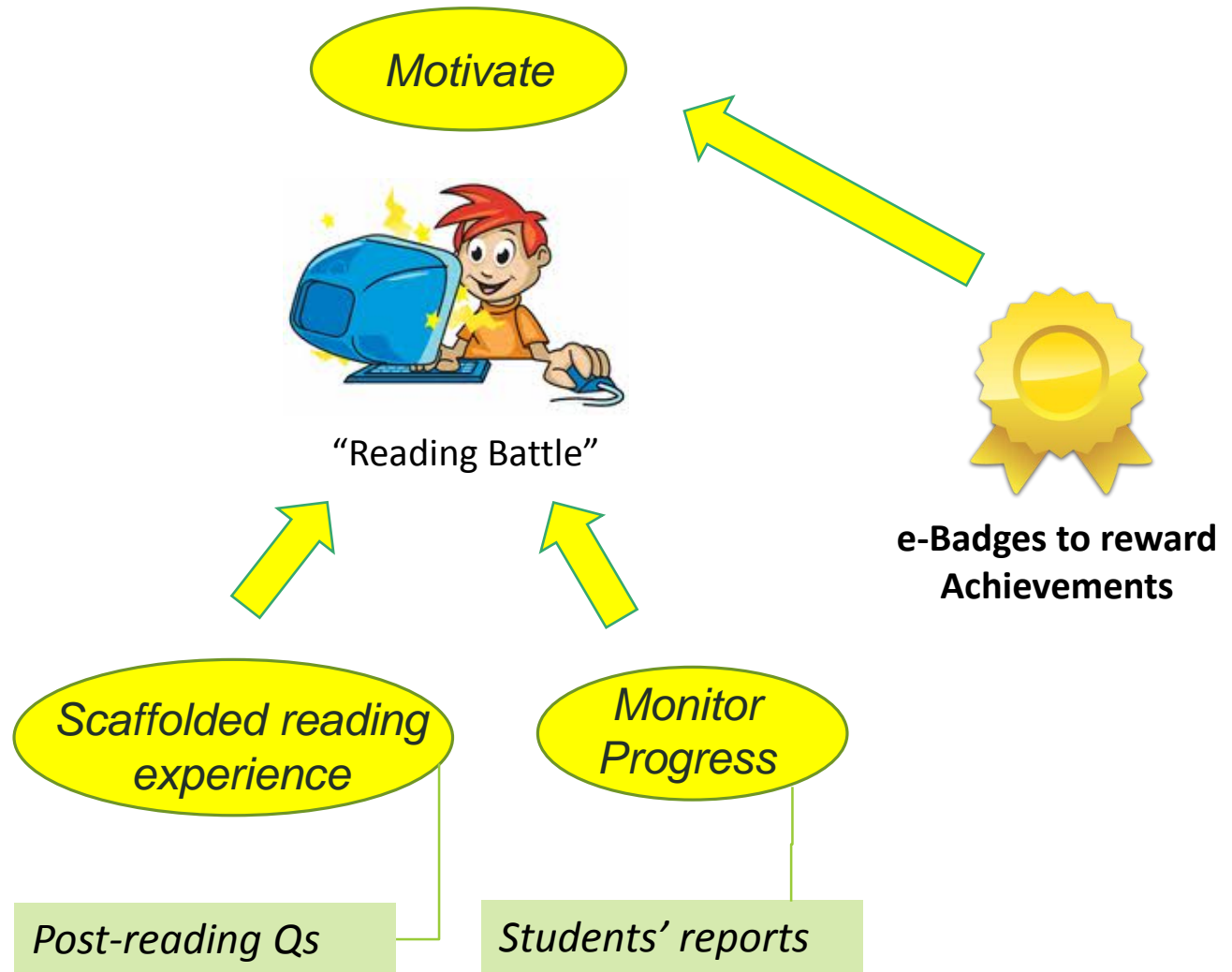


Explanation:

Sponges are animals that look like plants.



Motivate-Scaffold-Monitor



Motivate-Scaffold-Monitor

Every child a Winner!



Reading children's literature



"Reading Battle"



e-Badges to reward Achievements



Scaffolded reading experience

Monitor Progress

Post-reading Qs

Students' reports



About the Project 計劃內容

Self-check on their level of understanding with instant feedback & scaffolded support

閱讀
理解能力
獲得提升

Strengthen reading comprehension

Students read children's literature & attempt e-quiz

在即時評估及支援下，
學生能馬上了解自己對
文本的認知程度

學生閱讀兒童文學後，登入
雲端系統進行挑戰

Motivation Elements

鼓勵學生的元素...

Every child a Winner!

每個學生都是贏家!



e-Badges to reward achievements

以電子徽章表揚學生成就

More points are awarded to challenging questions

挑戰較難的問題能獲得更高分數

Periodic award schemes at different levels (e.g. class, form, school levels, inter-school contest, international contest)

定期獎勵計劃 (班際, 級際, 校際, 本地學校比賽, 國際比賽)

Leader board available 提供班級排名榜

e-Badges 電子徽章

Gamification describes the application of game mechanics such as points, badges, and levels to non-game processes 遊戲規則應用, 如點數, 徽章, 級別等

(Sarah Smith-Robbins, 2011).

The screenshot shows the 'Reading Battle' website interface. At the top, there is a navigation bar with icons for '挑戰' (Challenge), '成績' (Results), '排行榜' (Ranking), '個人檔案' (Profile), '報告' (Reports), and '聯絡' (Contact). The user is logged in as 'wendy'.

The main content area is titled '成績' (Results) and includes a summary section with the following data:

- 分數 (Score):** 408
- 平均 (Average):** 82
- 書本數目 (Number of Books):** 5
- 徽章 (Badges):** 90以上 (3), 80以上 (0), 70以上 (1)
- 按題目類別總結 (Summary by Topic Category):**
 - 資訊檢索: 89%
 - 推論: 80%
 - 解釋和整合: 88%
 - 評論: 100%

Below the summary is a '詳情' (Details) section with a table showing challenge results for various books:

書籍	挑戰分數			最高分	全校平均分	世界平均分
	第一次	第二次	第三次			
Jack and the Beanstalk	92			92	92	66
Festivals	92			92	92	74
拇指姑娘	58			58	65	71
Sharks	97			97	90	64
Colourful Coral Reefs	69	60		69	51	58

Leader board / 排行榜 (above 70) – Life Score



排行榜 (平均分高於或等於70者才會列入排行榜)

全部級別 全部班別 跨校年級 不包括平均分少於70

	Name	Class	School	Total Score	Completed Books	Average Score
1	施	P4D	齋色園主辦可立小學	7978	87	92
2	溫	P3W	中華基督教會協和小學	6761	72	94
3	鄭	P3I	中華基督教會協和小學	6703	69	97
4	黃	P4W	中華基督教會協和小學	5751	65	88
5	余	P4D	齋色園主辦可立小學	5494	78	70
6	郭	P5A	齋色園主辦可立小學	4690	58	81
7	盧	P3L	中華基督教會協和小學	4543	49	93
8						

Leader board / 排行榜 (above 80) – Life Score

The screenshot shows the 'Reading Battle' website interface. At the top, there is a navigation bar with icons for Battle, Result, Ranking, Profile, Report, and Contact. On the right, there are buttons for 'Survey', '中文', and 'Logout', along with the text '歡迎, teacher'. Below the navigation bar, the main content area features a header for 'Inter-school Form Life Score Ranking' with two tabs: 'Term Score Ranking' and 'Improvement Score Ranking'. A note states '(First 100 users with average score ≥ 80 will be listed)'. Below the header, there are filters for 'All school forms', 'All classes', 'Inter-school Form', and 'without average score < 80'. The main table displays the following data:

Name	Class	School	Total score	No. of books	Avg score
1 謝	P2A	LAM TIN METHODIST PRIMARY SCHOOL	14010	144	97
2 麥	P4E	LAM TIN METHODIST PRIMARY SCHOOL	13931	151	92
3 彭	P4E	LAM TIN METHODIST PRIMARY SCHOOL	13026	140	93
4 蘇	P3A	LAM TIN METHODIST PRIMARY SCHOOL	12662	133	95
5 施	P5C	Ho Lap Primary School	12451	136	92
6 溫	P4S	CCC HEEP WOH PRIMARY SCHOOL	11466	122	94
7 李	P2E	LAM TIN METHODIST PRIMARY SCHOOL	11370	119	96

At the bottom of the page, there is a cartoon illustration of a classroom with a chalkboard that says 'Reading Battle' and several animal characters. Below the illustration, there is a footer note: 'This site supports Google Chrome, Firefox, Internet Explorer 11 or above with minimum 1024x768 resolutions.'

Leader board 排行榜 (above 70)

Q4.



Name	Class	School	Total Score	Completed Books	Average Score
施	P4D	靈色園主辦可立小學	7978	87	92
溫	P3W	中華基督教會協和小學	6761	72	94
鄭	P3I	中華基督教會協和小學	6703	69	97
黃	P4W	中華基督教會協和小學	5751	65	88
余	P4D	靈色園主辦可立小學	5494	78	70
郭	P5A	靈色園主辦可立小學	4690	58	81
盧	P3L	中華基督教會協和小學	4543	49	93

Leader board 排行榜 (above 80)





學生名稱	班別	學校	總分	讀本數目	平均分
施	P4D	靈色園主辦可立小學	10337	112	92
鄭	P2A	藍田循道衛理小學	10291	113	91
蘇	P2B	藍田循道衛理小學	9984	104	96
徐	P2B	藍田循道衛理小學	8423	91	93
溫	P3W	中華基督教會協和小學	6857	73	94
鄭	P3I	中華基督教會協和小學	6703	69	97
黃	P4W	中華基督教會協和小學	6651	75	89


MC: Why do we change the ranking of students from “above 70 (out of 100)” to “above 80 (out of 100)”?


- A. Because we want students to set a higher goal for themselves
 - B. Because we found that some students can get a score above 70 by guessing the correct answer (without reading the book)
 - C. Because we want the lower grade students, say Primary 2 (age 7), can become top scorers
- <http://goo.gl/bGN6E0>


Leader board / 排行榜 (above 80) – Term Score






Battle


Result


Ranking


Profile


Report


Contact

歡迎, teacher
Logout

Inter-school Form Term Score Ranking

(First 100 users with average score ≥ 80 will be listed)

All school forms


All classes

Inter-school Form

without average score < 80

This term starts from 2015-02-01 to 2015-06-30.

	Name	Class	School	Term score	No. of books	Avg score
1	曾	P2C	St. Patrick's School	10778	131	82
2	蘇	P3F	CCC Wan Chai Church Kei To Primary School (Kowloon City)	4950	58	85
3	梁	P6D	St. Patrick's School	4370	46	95
4	劉	P3A	St. Patrick's School	3968	49	81
5	鄭	P5A	FDBWA Chow Chin Yau School	3870	41	94
6	余	P4A	St. Patrick's School	3380	41	82
7	李	P2E	LAM TIN METHODIST PRIMARY SCHOOL	3377	36	94



This site supports Google Chrome, Firefox, Internet Explorer 11 or above with minimum 1024x768 resolutions.

Leader board / 排行榜 (above 80) – Improvement Score

Reading Battle 閱讀大挑戰

Battle Result Ranking Profile Report Contact

Survey 中文 Logout

歡迎, teacher

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 2014-09-01 to 2015-01-31.
This term starts from 2015-02-01 to 2015-06-30.

	Name	Class	School	Improvement score	Last Term Score	Term score
1	梁	P6D	St. Patrick's School	3892	478	4370
2	余	P4A	St. Patrick's School	2329	1051	3380
3	梁	P4D	St. Patrick's School	2050	1025	3075
4	朱	P2F	CCC Wan Chai Church Kei To Primary School (Kowloon City)	2039	379	2418
5	白	P3C	Ho Lap Primary School	1072	188	1260
6	蔡	P2C	LAM TIN METHODIST PRIMARY SCHOOL	997	1231	2228
7	黎	P3C	King's College Old Boys' Association Primary School	957	746	1703

This site supports Google Chrome, Firefox, Internet Explorer 11 or above with minimum 1024x768 resolutions.

4 processes of comprehension

Information retrieval 資訊檢索

(e.g. What was Curious George' favourite book?)

Making inferences 推論 (e.g. cause-effect relationship)

(e.g. Why did the trolley go down the ramp very quickly?)

Interpret and integrate ideas 解釋和整合 (e.g. interpretation about characters feelings and behaviours)

(e.g. Curious George was a very active monkey, why would he sit still in the children's room?)

Evaluation 評論

(e.g. What should you do if you see a young boy playing with a trolley in a library?)



Source: office.com clip art

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.

Selection of children's literature

測驗庫涵蓋的兒童文學

General coverage 廣泛兒童文學讀物
Welcome recommendations by teachers 歡迎老師提供書目
Encompass a variety of genres (e.g. fiction, fairy tales, folklores, biographies, science, history, fables) 包含各種文學類別 (包括小說、童話、民間故事、人物傳記、科學、歷史、寓言等)
Divided into 5 levels of reading difficulty 分成五個閱讀難度

School-based titles 校本書目
Covers P1-P4 覆蓋小一至小四的程度
Titles submitted by teachers 由老師提供書目
Each school has a quota of 30 titles 每間學校擁有30項書目名額

Levels	Chinese	English
P1	~ 10	~ 30
P2	~ 40	~ 40
P3	~ 40	~ 40
P4	~ 45	~ 25
P5	~ 10	~ 3
total	145	140

About 400 titles in the system now
系統現已有大約400項書目

Levels of English titles

英文書閱讀級別

Level 級別	Type 書籍類別	Description 內容概要	Illustration ratio 圖文比例	# of Pages 頁數
1	Picture books 繪本	<p>Simple words, repetitive, pop-up books; large spacing; predictable verses; simple sentence; 3D cover; <20 words a page</p> <p>以圖為主，文字為輔，具重覆性，藉圖畫來增加孩子對書籍的興趣。 每頁少於20字, 立體封面, 文字簡單, 字體大, 易理解的段落, 句子簡單</p>	~ 4:1	<20
2	Picture books 繪本	<p>Longer sentences; higher sentence complexity; 3D cover, games; 20-30 words a page</p> <p>主題切合兒童的心理特點和需要，通過豐富的幻想，想像和誇張來塑造鮮明的形象，用曲折動人的故事情節和淺顯易懂的語言文字反映現實生活，抑惡揚善，起到教育人的目的。 每頁約20-30字, 立體封面, 包含遊戲和術語; 更長及複雜的句子</p>	3:1	<30

Levels of English titles

英文書閱讀級別

Level 級別	Type 書籍類別	Description 內容概要	Illustration ratio 圖文比例	# of Pages 頁數
3	Simple chapter books 簡單章節書	Involves story line, 30-48 words a page 包含故事情節 每頁約30-48字	2:1	30-40
4	Subject-based non-fiction 科本非小說	Involves higher level of thinking; Few illustration support; 40-50 words a page Small print size and spacing 需要更多思考較少插圖 每頁約40-50字 字體及句字間距較細	-	40-50
5	Chapter books 章節書	Include biography; pictures only in selected pages; higher level of concept load; 50-60 words 包含傳記, 只有數頁出現圖片, 較多富概念性的內容; 每頁約50-60字	-	50-60

Preliminary findings - 1

Quite a few students have been motivated to read and to engage themselves actively in Reading Battle

Those who have used Reading Battle a lot seemed to improve their reading ability faster than those who have hardly used it

Preliminary findings - 2



Reading Battle_Lam Tin Methodist Primary School
<https://www.youtube.com/watch?v=B2TtxRChViU&feature=youtu.be>

- A Primary 3 boy would only read when his mom read to him. However, due to the attraction of the “Reading Battle”, he now reads books on his own and challenges himself and others on the e-quiz platform. Within a year’s time, he has read over 130 books. Both his reading and writing ability has improved significantly.

Collaborating schools / 協作學校

Ho Lap Primary School (sponsored by Sik Sik Yuen)

Toi Shan Association Primary School

Xianggang Putonghua Yanxishe Primary School of Science & Creativity

Chinese Y.M.C.A. Primary School

Lam Tin Methodist Primary School

King's College Old Boys' Association Primary School No. 2

The Church of Christ in China Heep Woh Primary School

Yan Oi Tong Tin Ka Ping Primary School

King's College Old Boys' Association Primary School

St. Patrick's School

CCC Wan Chai Church Kei To Primary School (Kowloon City)

Hing Tak School

FDBWA Chow Chin Yau School

L.K.W.F.S.L.Wong Yiu Nam Primary School

Bonham Road Government Primary School

Gamification

The Reading Battle

Contact me if you are interested

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

and join the workshop: Sat 4:15-5:30pm

- **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>

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test2	password
test3	password
test4	password
test5	password
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test7	password
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test9	password
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test 30	password

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