

My-Bookstore: The Design of a Management Game to Promote Classroom Reading Activity

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Abstract: Modeled Sustained Silent Reading (MSSR) is one of significant approaches for pupils to developing early literacy. To promote MSSR, different follow-up activities are used. Due to the game characteristic of active participation, digital games are potentially regarded as a promising means to promote reading activity. Thus, the purpose of this study is to develop a management-based game, My-Bookstore, to investigate its feasibility and influence. My-Bookstore was used by primary school students, and some preliminary observations were discussed in this study.

Keywords: Modeled sustained silent reading, management game, follow-up activity

Introduction

Reading is regarded as a significant way to develop early literacy [3], especially for pupils. This is due to the fact that reading not only could foster pupils' capability of recognizing symbolic representation and meaning-making, but also the ability of learning how to learn. Because of the significance, different approaches were proposed to promote the reading activity. One of significant approaches is Modeled Sustained Silent Reading (MSSR), which emphasizes two features: teachers' modeling and students reading habit [4]. The former refers to the significant of teachers' modeling for students. This is because such modeling could have great impact on students so that students could develop reading attitude through imitation. The latter means that students of a class or a school read quietly continuously for a long period of time [3]. In particular, while reading, students can choose books freely and change other books whenever they lost interest in the books they had chosen. In other words, the SSR provides students an opportunity to explore what they really interest in and makes them have an enjoyable reading experience. Thus, students can make decisions by themselves and take control of their learning progress, which would be helpful to make students become lifelong readers.

Besides, to promote the reading activities, different follow-up activities are also promoted [8]. These follow-up activities should have no responsible, which is essentially different from traditional responsible reading reports. Instead, they provide an outlet for sharing reading enthusiasm with others [1]. Students are often voluntary to join and engage in exchanging opinions. These follow-up activities can be implemented in various ways, such as book talk, discussion, or even dramas, in which students are major roles; teachers can scaffold their representation or discussion according to the real situation.

With the rapid development of the game-based digital learning, many researchers adapted video game as an effective means to enhance students' learning motivation. Video games usually have fantastic elements, which attract students' attention and motivate them to

engage in learning tasks. Students are often devoted themselves to meet challenges voluntarily in games and obtain satisfaction from overcoming these challenges, which drives students to constantly participate in game playing. Thus, the game-based learning could be regarded as a non-responsible task from students' view. In other words, the game strategy might be one of potential approaches to promote students' sustained reading behaviors.

Under such vein, the purpose of this study is to develop a game-based follow-up activity, especially in the form of a management game: My-Bookstore. More specifically, a student acts as a manager to run his/her bookstore, including recording what he/she had read and recommending the books he/she likes to their classmates. The details would be introduced in the following sections.

1. Conceptual model and design rationales

1.1 Conceptual model

The My-Bookstore System consisted of three components: book-recording component, store-management component, and book-recommendation component. (See Figure 1). After students read books, they need to record these books as the virtual books via book-recording component in the My-Bookstore. In other words, a virtual book in the My-Bookstore refers to a learning portfolio for his/her reading. Then, students in the store-management component could decorate their bookstores to sell these virtual books, especially adding value these virtual books, such as introducing, commenting, or advertising these virtual books. These could be done in the book-recommendation component. Then students could sell their virtual books. When a student successfully sells a virtual book, the student who buys the book could get the book from the classroom library, which implies that the student successfully recommend this classmates to read a book.

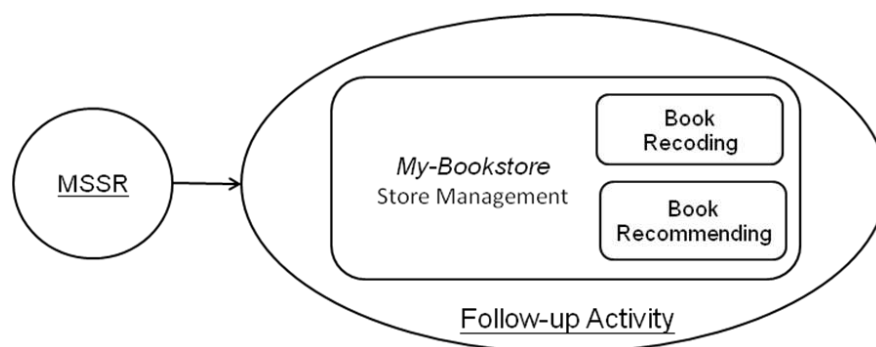


Figure 1. The conceptual model of My-Bookstore system

1.2 Design rationale I: enhancing ownership of book and reading

Before introducing the system functions, two design rationales are described in this section. When students participate with the recommending book activity in the beginning period, student should get the sense of achievability. However, the sense of achievability might make little contribution to stimulate students to persistently participate in reading activity if such achievability not be emphasized. Within a management game, students could get the sense of satisfaction gradually through long-term sustained reading, and further shape their reading habit. In addition, a management game could enhance students' sense of ownership through a visible book stocking-recommendation-selling cycle within the game environment. As mentioned above, Students could use adornments to prettify their

bookstores. Students could make their bookstores different than other students. The gradually enriched appearance of a bookstore would reflect a student's effort and enhance the sense of ownership, which, in turn, stimulates them to engage in the management and reading activities. In other words, through the management game element, students are encouraged to participate in the activities.

1.3 Design rationale II: fostering social interaction among the readers

The management game is underpinned by a community-based environment which connects different classes of readers. A bookstore is designed as a personal place, which was implemented based on a hierarchical architecture. The hierarchical architecture of the game included four particular levels: person, group, class and school. By doing so, students could find out the location of certain student's bookstore and visit them according to the hierarchical architecture. On the other hand, since a student's bookstore is located in public, student could share personal information to his/her classmates by some communication functions in the game. For example, a student could send message to invite friends for visiting his/her bookstore.

Furthermore, the characteristic of social interaction within the management game gives students a smooth access road to recommend books. Through the communication function and the promotion mechanism, students could actively transmit immediate information to others. For example, a student could send a message to inform his/her friends about the latest book sold in the bookstore. His friends could thus be aware of a new book worthy of reading, even borrow and read it. In other words, students could benefit each other through mutually recommending books.

2. My-Bookstore system

2.1 Book-recording

Students could log into the *book-recording* function to register the books they read in the MSSR phase. Students not only note down the name of the book by the function, but also record their reading status. For example, system would ask some questions such as "Do you like this book?", "Have you read all the paragraphs in this book?" etc. Figure 2 illustrates the screen shot of the *book-recording* function.

The purpose of registering books is not for teachers to check whether students did read this book or not. Actually, the *book-recording* function was designed for two particular intentions. The first one is to help teachers to understand each student's reading behaviors more easily. Not focus on "whether" student read this book or not or "what" student read from this book, such as "Please give a brief description about this book", the recording function further emphasize "how" student read this book and "why" students read this books. For example, the register program would post some questions, such as "Do you like this book?", "Is this book an easy read one?", "why did you choice this books" etc. Teachers could give detail information about student's reading favors, speed of reading and even the reasons for borrowing by the registered logs from *book-recording* function. Teachers could be aware of each student's reading status and provide student suitable assistance.

The second intention of the register program is to transform student's reading logs as the game attributes. In the designed game, certain basic attributes were associated with student's real reading behaviors. On the other hand, student's reading behaviors could partly take effect to the performance in the virtual world of the game. Student's reading logs are not only used by teachers, but also become the foundational data to shaping the background

of the game. The detail mechanism of transformation will be introduced in the followed session.

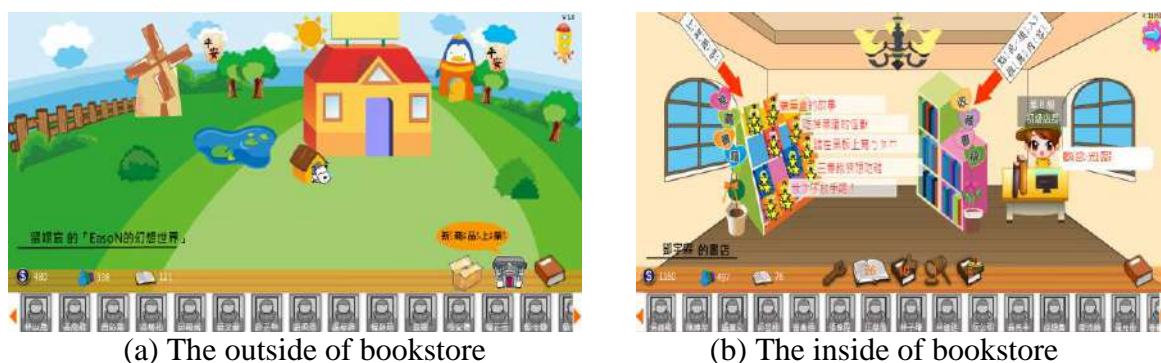


(a) The input field for book codes (b) The questions provided by *book-recording* function

Figure 2. The interface of the *book-recording* function

2.2 Store-management

Since the main purpose of the follow-up activity is to create a space for students to share and recommend books. In this game, student acts a bookstore manager to run a bookstore. The bookstore could earn money through selling (i.e., recommending) books to others. Students have to prepare attractive introductions about the book to encourage other students to buy it in the game environment. In particular, students don't have to pay any virtual coins to buy the book they are interested in. Students just only borrow the book from the classroom library. On the other hand, when a student accepts other students' recommendations to borrow books, this behavior is regarded as a consumption activity in the virtual game world. Students would earn coins from successful recommendation. The most important job for every bookstore manager is to recommend books which they have read before as possible as they can. Figure 3 illustrates the screen shot of the *store-management* function



(a) The outside of bookstore

(b) The inside of bookstore

Figure 3. The interfaces of *My-bookstore*

2.3 Book-recommendation

After reading a book, students may generate some ideas or opinions from the book, and desire to share to his friends or classmate. *My-Bookstore* provided four approaches to recommend books. Students could introduce the books or give comments by *star rating*, *sound recording*, *drawing* and *typewriting*. The *star rating* function provided students a scaffolding to begin to recommend books. Students only have to rate the star and choose

brief comments provided by the system. This approach was designed as a training for students to learn some representative criterions and further apply them proficiently through continual practice.

By the sound recording function, students can introduce a book through giving a sort speaking by their personal devices. Students could speak aloud certain specific plots of a story or some attractive sections in the book. The sound recording function provides an opportunity for students to practice their speaking ability. In addition, students could constantly modify the recorded contents through the support of digital technology. This function offers an instinctive approach to organize incoherent sentiment and make them become methodical statements.

The third approach to recommend books is drawing a picture. Considering that the target users are children, the drawing function provides students a nature way to share what they read. This function further provides an opportunity for students to apply their creativity to combine what they read in the book and the experience in the real life. Students could draw a particular scene of a story or delineate certain pleasing roles. In addition, this function could be seen as a foundational approach to promote students to generate ideas. The drew pictures could facilitate students to combine fragmented ideas into more integral and meaningful contents.

The fourth recommending approach is typewriting. Students could introduce books and share opinions through words and sentences. This approach helps students to present ideas in more detail way. Certainly, students should have adequate writing ability for expressing meaning. This function provides different difficulty levels for students to recommend books. In the first level, students would be allowed to comment a book by only one sentence. This level facilitates students to present ideas in an easy way in the beginning. In the second level, students would be allowed to use more than one sentence. Students have to write more sentences to express ideas. In the final level, students have to evaluate books and give critical comments. Students could claim the advantages and shortcomings of a book. Figure 4 illustrates the screen shot of the *book-recommendation* function.



(a) The function list of recommending



(b) The star rating function



(c) The drawing function



(d) The sound recording function



(e) The type writing functions

Figure 4. The interface of the recommending functions

3. Preliminary observations

3.1 Research field and participants

There were two hundred first grade elementary school students (7 classes) participating in this study. All students executed the *Modeled Sustained Silent Reading* in the morning study period four days a week. In order to facilitate access to books, which is an important element to promote reading [8], a small-scale book library was set in each classroom. Every classroom library has about four hundred books, which were picked out by all the first grade teachers, and were suitable for the young children.

Before the reading period, students could pick two or three books to their seats from the classroom library. And then, the teacher reminded students of constantly keeping quiet and concentrating attention on reading during the MSSR period. Students have an average of twenty minutes in every MSSR period. After reading, students registered the books by *book-recording* function. Students spend about five minutes for registering, and then turned to the management game to recommend books. Students have ten to fifty minutes a day playing the game in the school. Besides, students would be allowed to play the game in the after-school time. Students totally participated in these activities for four months. Figure 7 illustrates the process of the follow-up activity.

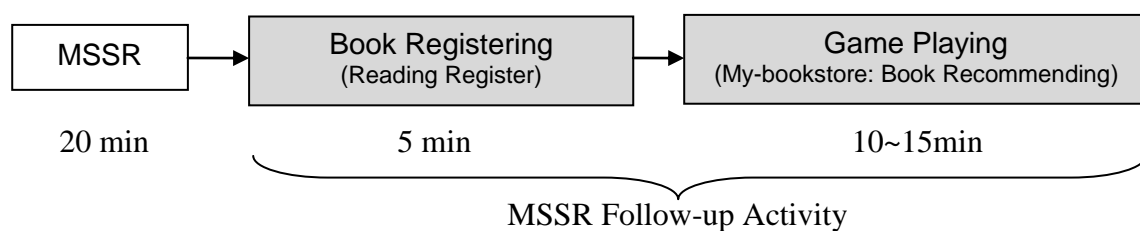


Figure 7. The process of the designed MSSR Follow-up Activity

3.2 Preliminary results

This study gave a preliminary observation of a relationship between reading behaviors and recommending behaviors. The system logs of book reading and recommendation were collected. Besides, the logs of making reservations and reading after accepting recommendation were also collected. The detail data were shown in Table 1. The data showed that the amount of the reading books was more than twenty six hundred; it means that each student read an average of one hundred books in the past four month. In addition, the data also indicated that students totally recommended almost ten hundred books. On the other hand, each student recommended an average of forty books. The recommendation rate was approximately forty percent.

Comparing with the four recommendation approaches, the star rating was the most applied approach (94.2%). One possible reason is that grading is essentially simple and is involved without the complicated process of restructuring the contents of a book; students can easily complete the tasks without any frustration. The second approach was drawing (26.4%). The result basically agreed with the anticipation of the designed rational, that drawing should be a most nature way for young children to export ideas. In addition, the last two approaches were type writing (17.5%) and sound recording (12.2%).

The unexpected result was that the sound recording took the lowest proportion. According to the anticipation, speaking should be a nature way for expressing ideas, however; the amount of the recommendation showed that most of the children were not willing to use the sound recording function. The teachers provided a possible reason, that the noisy environment of classroom would reduce the quality of recorded sound, especially in which all students recorded sound at the same time. Students usually felt disappointed when listening to the recorded sound. In order to avoid this problem, we provided each student an earphone with microphone to improve the quality of recorded sound.

The data also included the amount of making reservations and reading amount after accepting recommendations. The data indicated that the total amount of making reservations was almost sixteen hundred times. It means that each student accepted other students' recommendations in an average of seven times (16%). But the data also indicated that the total times of taking books from classroom library after accepting recommendations were relatively low (5%). The cause should be that the system didn't provide support function to remind students the books, which they had ordered in the game environment. Students usually meet difficulty in find out the books in the classroom library.

Table 1. The amounts of book reading, book recommending and accepting recommendation

Behavior	Item	Amount	Average (each student)	Rate (percent)
Reading	Book Reading	26973	114	--
Recommending* (in game)	Book Recommending	9744	41	100 %
	Star-Rating	9177	39	94.2 %
	Drawing	2575	11	26.4 %
	Typewriting	1701	7	17.5 %
	Sound Recording	1191	5	12.2 %
Accepting Recommendation (in game)	Book Preordering	1598	7	16%
	Reading after Book Preordering	505	2	5%

*Students could recommend a book by more than one approach

In addition, this study explored the affective attitude of the participators. Students' responses of the designed affective questionnaire, which based on the ARCS motivational gaming scale [2][5][6][7], including four dimensions of items: attention, relevance, confidence and satisfaction, were collected to understand students' feeling during game playing. The data showed the positive results. Most of the students agreed that the management game is interesting and attractive. Students like the feeling to be in charge of self's bookstore. In addition, the students also agreed that they often visited other students' bookstores due to the curiosity to know what books had been recommended by their classmates. Besides, most of the students agreed that they got a clear goal during game playing and have sufficient confident to manage self's bookstore well. Finally, the data further indicated that most of the students get satisfaction when they successfully recommend a book to others and earned virtual coins for their bookstores. Figure 8 illustrates the average scores of the designed questionnaire in four dimensions.

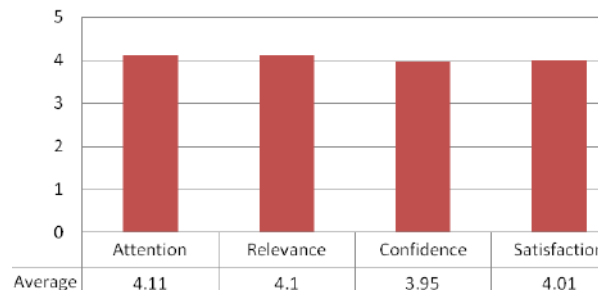


Figure 8. The average score of the designed questionnaire

4. Future work

This study attended to design a management game to support classroom reading activity. A recommending activity was embedded in the game environment and shape as a reading follow-up activity. Every student became an administrator controlling self's reading. Besides, through recommending books, students became active explorers and engaged in finding out the attractive elements in the books and feeling excited to share their products. The recommending activity involves with the process of critical thinking, which can facilitate the internalization of knowledge and transformation to meaningful information. In addition, students have the opportunity to be acquainted with more books from others' recommendation.

The future work could be focused on the quality analysis of recommendation contents. In addition, the action logs of game playing could be further analyzed to identify different behavior patterns, which could facilitate looking for potential factors influencing reading and recommending. Finally, the gender difference in recommending behavior is also a potential research issue.

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