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A Study of E-readers with Multimedia Annotation to Help Elementary School Students Learning with Parental Involvement

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Abstract:
In recent years, E-readers become popular and have potentials to be widely employed to facilitate learning in the future. One advantage that E-reader provides is to facilitate the interaction among students, teachers and parents through what students learned in class and after school. In this study, we attempt to use E-readers to bridge students' learning between school and home and hope to achieve seamless learning. EFL(English as a foreign language) learning activities are designed with the contexts of real daily life at home and school. One multimedia annotation in E-readers recording students' EFL portfolios in class and at home help parents not only to know their children learning at school but also to facilitate children's review or homework accomplishment after school. That will provide parents more opportunity to realize and participate in their children learning.
After experiment, it was found that there was a significant correlation between after-class annotation and students' learning achievement and indicate that learning behavior like using annotation after class needs to be concerned much. Moreover, parental participation was also found to have significant effect to students' learning attitude since E-readers allow students to have opportunity to practice and demonstrate their English skills at home, therefore parents can know their children's learning and help their learning in English. It really helps students using English for their daily life communication.

Keywords: E-readers, Multimedia annotations, Parental Involvement, Social Economic Status.

Introduction

E-readers are concerned recently not only for changing interaction between human and computers but also having potentials to change learning profoundly. From the first-generation Kindle announced by the Amazon online bookstore in 2007 to the iPads and IPhones of Apple become more and more prevailing recently, these trends show e-Readers have a rapid development and will affect significantly the behavior of human beings using computers. Furthermore, more applications for E-readers become available.

And for learning, many factors of learning process influencing students' learning behavior and their achievement, including learning in class, after class and after school. The influence of the family members for learning is the most commonly overlooked, particularly parental involvement after school (Krumm, 1996). Previous research shows that cohesive parent-teacher interaction and parental involvement in students' learning activities will facilitate the development of students' learning behavior and their achievement (Griffith, 1998).

In this study, we attempt to develop one multimedia annotation tool in E-readers to bridge students' learning between school and home and hope to achieve seamless learning because students can take E-readers all day long. For our design of multimedia annotation and learning activities, first, we survey user needs and expert advice to design multimedia annotation functions in E-readers. Meanwhile, we discussed with teachers about learning activities at school and home by using real-life contexts at school and home as well like classroom facilities introduction, dinner description or family members introduction. Ensuring our design can meet the learning curriculum requirements. The experiment course is Basic English in the elementary school. The E-readers record students' EFL process in class and at home. This design not only makes parents know their children learning at school but also help parents to facilitate children's review or homework accomplishment after school. That will provide parents more opportunity to realize and participate their children learning.

Previous studies emphasized students' annotation in class instead of after school and also put less attention on parental participation on students' learning. Therefore, this study try to employ E-readers with multimedia annotation in class and after school as well and hope to bridge students' learning between school and home; Meanwhile, it can facilitate parental understanding of their children learning through E-readers and possibly help parents have more involvements in their children's learning. We use the questionnaire to understand students' perceptions and attitude toward our proposed system after the investigation of students' learning behaviors like amount of annotation in class or at home, parental involvements and their effect to learning achievements by statistic methods.

1. Literature review

1.1 Annotation is necessary in the E-reader

E-readers are mobile devices and easy to carry with a suitable display, which can support learning in different contexts, particularly for exploring real context. Furthermore, the powerful features including multi-touch operation, easy-to-use user interface, data storage and wireless communications make E-readers become more prevailing than laptop computers. Annotation tool is one of important applications to facilitate reading in E-readers, which allow users to highlight, underline, strikethrough, voice recording, and date stamp learning materials. For example, in 2005 McFall designed an annotation to read electronic textbooks and the iPads have a powerful and flexible annotation program, iAnnotate, providing user customizable toolbars by choosing only the functions that users need when reading the PDF files. Previous research also shows annotation function in E-readers is a must (Ajidev, 2011).

1.2 Language learning with real-life situation

In the aspect of language learning, students have to learn four main skills, listening, speaking, reading and writing. Ridley and Walther (2000) believed that good learning curricula can help students and stimulate them to conduct active learning. Learning and dialoging in real situations is benefit for language learning. Giving consideration to language's usability, using the target language in familiar daily life contexts can help students practice what they learned in class and achieve good learning effect. Li (1984) also pointed out language learning should be applied and used in real situations, particularly for the novice students; otherwise most language learning in class become vain and only for exams. Using real life and familiar context for practice or homework are interesting to students; focus on communication and meaningful dialog with

providing more listening, speaking and reading exercises is more useful, particularly for the novice students (Rao, 2002; Sun & Cheng, 2002).

1.3 The impact of parental involvement in learning

Parental involvement is a combination of commitment and active participation to help students learning at school and home. Hoover-Dempsey and Sandler (2005) pointed out that the parents actively involved in their children's education can positively influences learning. Parental involvement brings positive effect for students, parents and schools (Bauch, 1988; Hoover-Dempsey et al., 1987; 2005). In deep investigation of parental effect to students learning, educational experts pay close attention to the socioeconomic status of parents and their effect to student's learning achievement. Many studies have explored the factors of parental socioeconomics and their relationship with students' learning, generally in parental education degree, occupation and income as a measure item. It was found that the higher social-economics status parents have, the better achievement students achieve. This is because parents with higher socioeconomic status will have more social resources and greater ability to educate their kids (Chen et al., 1996; Kung, 2002; Ma, 2005, Korat and Shamir, 2008).

Based on the literature review and research motivation, the purpose of this study are: (1) to design and develop one multimedia annotation tool in E-readers and facilitate students' English learning in class and after school, (2) use the e-reader multimedia annotation tool to facilitate parent understanding and involvement of students' learning. (3) and explore the students' learning behaviors and perception using annotation in class and after school and their effect to learning.

2. Method

2.1 Subjects and Materials

The participants of the study are the 20 fourth-grade students in the elementary school, there were four classes for EFL per week and each class was 50 minutes. The experimental period was four weeks. The contents of the text book using by experimental participants were scanned and digitized into E-readers as learning materials, which are not different from the physical textbook. Annotation tool VPEN in E-readers allows students to annotate the text or images of digitized learning materials. For annotation contents, text and voice can also be added and coexist with each annotated learning materials (Figure 1).

Figure 1, the screen of Annotations in E-readers

2.2 Research Procedure

The experimental procedure was divided into three phases.

- The first phase had two classes in the first week to train students to be familiar with E-readers and use VPEN to make textual and voice annotation correctly.
- Phase II having another two classes of the first week, students can only use E-readers in class and at school like making annotation or recording teacher lecture in English class or replaying lecture voice after class for rehearsal. However, students cannot take E-readers back to home in Phase II for ensuring students know how to use E-readers correctly like charging E-readers' battery properly.
- The third phase was from the second week, students can take E-readers back home, and parents can know their children's English learning at school through E-readers and perhaps they can help their children's review or homework accomplishment after school.

2.3 Activity design

Two learning activities after school were designed for participants to motivate their learning English by using VPEN in E-readers, one is to introduce the family member, the other is to introduce today dinner. Both of them are related to their familiar daily life and participants can practice and apply what they learned in class to describe their real daily life in English. Around one class with four week were dispatched to each learning activity; in the beginning, students were asked to use simple English sentences or phrases in text or voice to introduce their family members; after that, encouraging experimental students to invite their family members like parents to involve in the learning activities like recoding their own voice or text in E-readers for self-introduction. The second activity followed up the first activity and was related to students' dinner at home; beside the introduction of food at dinner, students can explain the favorite food of their family members and the reasons behind. Hence, the two activities looks interesting since they are quite closely related to students' familiar daily life and their family members can easily be engaged if they can.

Figure 2, Activity 1 to introduce the family member.

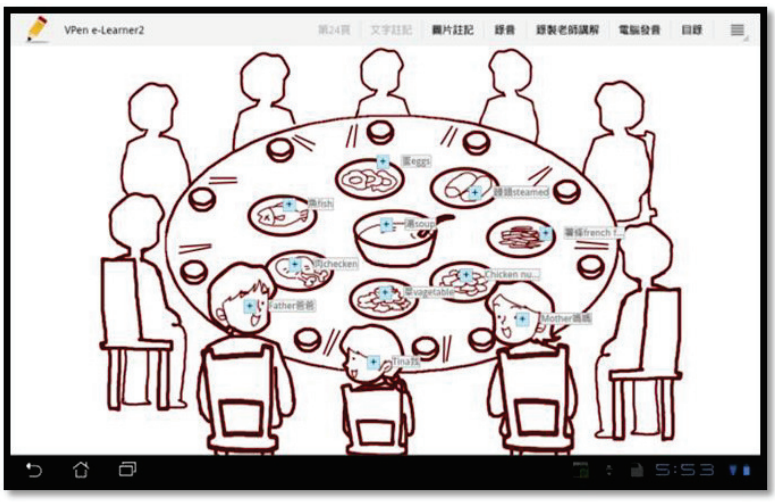

Figure 3, Activity 2 to introduce today dinner.

2.4 Reliability of the questionnaire

The study designed questionnaire based on the TAM (technology Acceptance Model) to understand the perception of students toward the proposed tool and learning activities; we also interview students and parents to know the reasons behind. The questionnaire design has two parts. Part 1 surveyed the students' perception about the proposed system. Part 2 tried to understand the students' perception of after-school usefulness of parental engagement and intention to use and learning activities. The validity of was checked and designed by experts and elementary school teachers. Questionnaire reliability was checked by Cronbach's alpha (α) coefficient, and the values are in the followings. Part 1: Easy to use (α=0.742), Usefulness (α=0.828), Intention to use (α=0.770); Part 2: Usefulness after school(α=0.916), Intention to us after school (α=0.874), Usefulness of parental concern (α=0.801), Usefulness of parental participation (α=0.793), Usefulness of activity 1 (α=0.869), Usefulness of activity 2 (α=0.875)

3. Results and Discussion

3.1 Results of questionnaire analysis

The questionnaires were distributed to 20 students and 17 valid questionnaires returned. As the average value of each dimension is above 3.8, and most of the questionnaire items are more than 4.0. Obviously, students have a positive attitude for our proposed system and activity designs.

3.2 Learning in the class and after class

Table 2 showed the descriptive statistics of learning behavior using multimedia annotation in class and after class like the quantity of text annotation and voice annotation. And the quantity of annotation in class is substantially lower than after class. After interview, the reason was that students had not much opportunity and time to make annotation in class because teacher gave intensive oral lecture and students were occupied in listening. Therefore, In class, students normally employed E-readers only for reading learning material and recording teacher voice lectures, resulting in the quantity of annotation in class is much lower than that after class.

Table 2, Descriptive statistics about quantity of annotation in the class and after class

		Quantity of text annotation	Quantity of voice annotation	Total
In class	Average	10.18	4.82	17.18
	SD	9.268	7.955	24.003
After class	Average	126.47	54.53	132.35
	SD	58.703	43.264	63.353

Regarding learning behaviors using annotation, only the quantity of text annotation after class was significantly related to learning achievement (0.576, $p < 0.05$) ($p = 0.000$). Although previous studies in the literature survey found that the number of annotations would also significantly affect learning, but almost of them in class. However, our result further found that there was significant correlation between annotation after class and learning achievements and showed out the importance of learning behavior after class. It indicated that students' using E-reader at home to facilitate their learning is worth.

3.3 The impact of parental participation to learning

In the section, we explored the impact of parental involvement after school using questionnaires, including usefulness of parental care and usefulness of parental participation. We would like to study students' perceived usefulness about parental involvement. The results showed that parental care and participation for learning after school can bring a significantly positive effect to students' intension to use E-reader. The results showed that 'usefulness of parental care" was significantly related to the four variables, Usefulness after school, Intention to use after school, Usefulness of activity 1 and Usefulness of activity 2, the value is (0.402 ,$p > 0.05$), (0.519, $p < 0.05$), (0.524, $p < 0.05$) and (0.501, $p < 0.05$), and the 'usefulness of parental participation" is also significantly correlated to the above four variables, (0.421 ,$p > 0.05$), (0.699, $p < 0.01$) , (0.529, $p < 0.05$) and (0.586, $p < 0.05$).The students expressed, "My father and mother read English with me, they like to teach me when I have learning questions"," My parents will help me to find learning information"," parents help me a lot and also care about my learning and grades". However, still a small number of parents cannot help children due to their poor English or no time, "parents told me to do English homework by myself, do not bother them", " they did not help me because they were busy".

Regarding predicting intention to use E-readers after class, the statistic method of stepwise multiple regression was employed and the results were shown that usefulness after class can explain 73.4% of intention to use after class and reach a significant level ($F = 45.256$, $p = .000$). Adding the variable, Usefulness of parental participation, it was found that Usefulness after class and Usefulness of parental participation can explain 87.0% of Intention to use after class and reach a significant level ($F = 54.626$, $p = .000$), indicating parental participation has essential impact on students learning.

3.4 Conclusions

In this study, we use E-readers to bridge students' learning between school and home in EFL learning. Learning activities are designed with the contexts of real daily life at home and school for students' practice in English. The E-readers recording students' EFL learning process in class and at home not only make parents know their children learning at school but also help parents to

facilitate children's review or homework accomplishment after school. That will provide parents more opportunity to realize and participate in their children learning.

From the results of this study, it was found that students made annotations after class much more than in class and there is a significant correlation between after-class annotation and students' learning achievement This is an important finding, the previous studies mostly focused on the note-taking behaviors in class and some of them showed that when students taking notes in class, they will become distracted in listening lecture, particularly for the low achievement students. More importantly, it was also found that the parental participation did have significant effect to students' learning attitude. E-readers allow students to have opportunity to practice and demonstrate their English skills at home and interact with parents in English. It really helps build students' confidence in using English for their daily life communication.

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