Proposal of Note-map for Collaborative Reading Using an E-book System

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Abstract: E-books are continually being introduced to educational institutions. Many e-books systems have a note-taking function to support learners' record of their reading by themselves. However, collaborative note-taking provides many benefits to learners, and as a way to improve reading efficiency and stimulate students' learning motivation, collaborative reading has been widely used in educational fields. In this study, we describe a note-map function to support students' collaborative reading. Students share their notes, edit others' notes, communicate with others using the note-map function, and a scenario of using the system is resented.

Keywords: Collaborative reading, note-taking, E-book system, online learning

1. Introduction

In the last decade, there are a lot of online learning platforms developed for online teaching and learning. Especially recently, online learning attracts attention from many educational institutions. Enriching the online educational system and improving the online educational method were required since the past.

In Japan, e-books are continually being introduced to educational institutions and many e-book systems have a note-taking function. In our previous research, we found that the students took notes even if the teacher did not require it (Yin et al., 2015; Yin et al., 2017; Zhou, Takada, & Yin, 2019). Taking notes helps students to understand the materials and organize their way of thinking and encourages students to build connections between what is presented and what they already know (Peper, & Mayer, 1986).

After taking notes, they always share their notes to learn from each other. Collaborative learning is an effective formal education strategy, as Vygotsky's ideas concerning the zone of proximal development provide strong support for the inclusion of collaborative learning strategies in classroom instruction (Doolittle, 1995). Al-Zaidi, Joy, & Jane (2013) indicated that social network sites have been used to share notes during lectures. They found that applications with social interaction features would enhance students' current note-taking practice during lectures. Collaborative note-taking provides important benefits: better learner engagement, collaborative learning, and knowledge building (Silvestre, Vidal, & Broisin, 2014).

In this study, the authors propose a note-map function in the e-book system to support students to review their reading path, share their notes, edit others' notes, communicate with others, and present scenario of using the system.

2. Relevant Literature

There are some social learning platforms for students' collaborative reading (e.g., Perusall, WiREAD) that aim to change the reading experience from solitary to collective (King, 2016).

Silvestre, Vidal, & Broisin (2014) developed Tsaap-Notes, an open micro-blogging platform dedicated to collaborative note-taking that can be used as a standalone application, or fully integrated into existing virtual learning environments. The Tsaap-Notes was useful when the time of preparing

exams has come. Reilly, & Shen, (2011) applied a student-centered collaborative learning pedagogy into the lecture environment through a novel Smartphone-based real-time collaborative note-taking application – GroupNotes – that encourages students to proactively engage themselves by means of student-student interaction in a lecture. Popescu, E., et al. (2016) proposed a mobile application specifically conceived for educational settings, called EduNotes. Students can write notes associated with a specific lecture slide and share them with the peer.

3. Method

3.1 DITeL System

We have developed the E-book system DITel to support students' reading and collocate log data in the class (Yin & Hwang, 2018). Students read it by clicking "Prev" and "Next" buttons and write notes, highlight, underline, bookmark a page (Figure 1). As previous research, even if note-taking was not required, many students took notes and made highlights during their study (Zhou, Takada, & Yin, 2019).
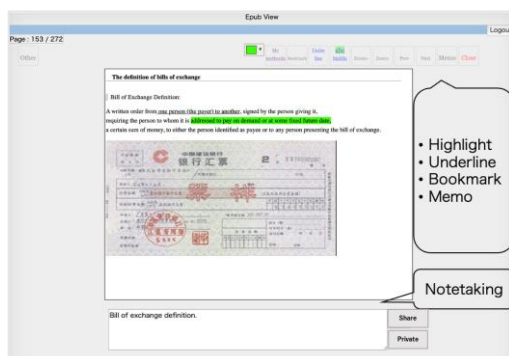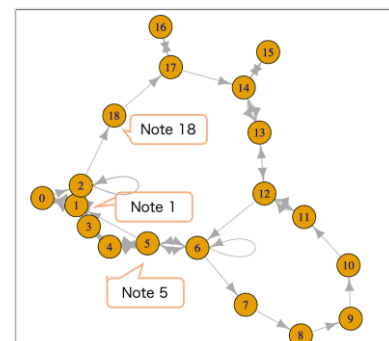

Figure. 1 Design of DITel System

Figure. 2   Note-map

3.2 Note-map

We designed note-map including students' reading paths to support students with their reflection on their reading behavior and rethinking their reading by looking at others' reading paths. This function visualizes the students' reading paths to help their review. We expect this function to enable students' reflection by their reading paths.

Students decide on sharing their note or not when they are taking the note. Students click the "Share" button if they want to share their notes with others. The notes will be shown in the note map. Note map includes pages, reading trajectories, and notes. In Figure 2, the yellow dot represents a page, and the gray arrows represent the movement of direction. The orange rectangle shows the notes on the page. All users can read their note map to review and read others' note map to learn from others.

3.3 Scenario

The situation in which several students read a book together is suitable to use our system (Figure 3). Each student read a chapter and share the knowledge with others. They need to summarize the contents by underlining the important points or taking notes. The system will provide a note map to them when they complete their reading tasks. They present the contents they read according to the note map. All students share their note map and add a comment to others' note map.

Students directly find the key points of the chapter which s/he did not read and improve their learning efficiency through obtaining the note-map of other students. Since we record the students' reading track and display it on the note-map, the students will see the relationship among the pages on the note-map. Students can use this function to refer to others' reading trajectories while reading notes. In other words, students can select the pages to read according to their needs, such as, s/he extracts the closely related pages to read according to the reading trajectories, if there is knowledge point that s/he wants to understand in detail.

From the standpoint of the student sharing her/his notes, since they will share their notes with other students, they should stand as a teaching point of view and be careful about writing the notes. This is will be a good reflection on their study and will gain a deeper understanding by teaching others what they have learned. Every student can edit the notes that are shared; the notes will get error correction from other students.

From the standpoint of a student who is reading other students' notes, s/he can shorten her/his reading time. A book that takes seven days to read may be finished in three days by reading other students' notes and listening to their explanations. After knowing the content of the whole book, students can read and understand it carefully according to their own needs.

4. Contributions and Future Work

Several ideas of collaborative note-taking systems are independent systems, and few are built on the e-books. A visual note-map that we proposed is based on separate student's reading behavior on DITel e-book system. It not only provides sharing capability but also creates an opportunity for each student to reflect on her/himself. Furthermore, a scenario of usage that supports collaborative reading was presented in this paper. The collaborative reading which is a kind of method to improve reading efficiency and encourage student's engagement has been wildly used in educational fields. In the future, the effectiveness of the system will be tested in the experiment.
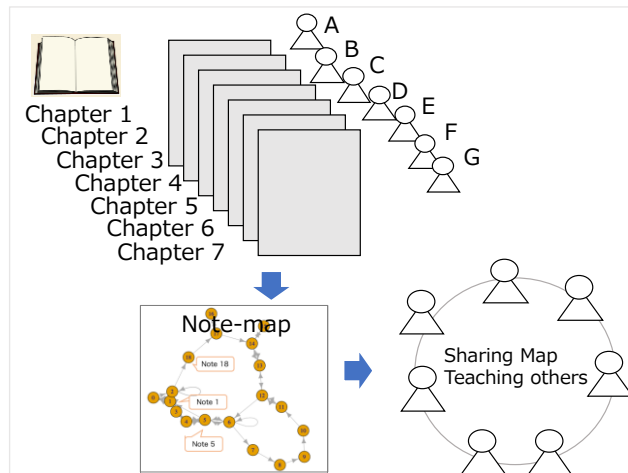

Figure 3 Scenario of using note map

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