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Connecting Social Reading and Writing: A Social Annotation Synthesizer Tool

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Abstract: This poster presents the design of an application – Social Annotation Synthesizer (SASy) – which aims to support knowledge synthesis in social reading activities. SASy is built upon a Web annotation application Hypothes.is and provides a space for students to filter, connect and classify the annotations to generate knowledge syntheses that feed into other learning events. Future implementation of the design will promote knowledge construction and application in collaborative learning activities.

Introduction

Social reading – sharing thoughts or negotiating meanings while reading a shared document – has become essential in classrooms at all levels where students discuss course readings. It entails critical reading and classroom dialogues which are often important means to collaboratively make sense of the content and achieve higher-order competencies such as critical thinking and collaboration. As a sophisticated learning task, social reading requires readers to employ effective strategies to achieve learning goals (Reiser, 2004). For example, students need to continually make connections between the reading, discourse, and other knowledge work (e.g., writings). As the complexity of learning tasks rises, the connections can get messy and fuzzy. Greater attention must be given to supporting students' navigation and maintenance of such connections.

One initiative to support this need is the application of Web annotation technologies. Web annotation is a genre of information technology that allows a user to annotate information in a shared document and anchor a discussion to the annotated information. When it is used socially in online classrooms, Web annotation can support social reading by helping students collaboratively process domain-specific knowledge (Zhu et al., 2020). However, it remains unclear whether students are able to use the annotations to guide further higher-level knowledge work, such as knowledge construction. While current annotation systems support the expression of students' ideas throughout annotations, they fail to support further knowledge synthesis that is essential for constructing coherent knowledge out of fragmentary information. Without sufficient support for the synthesis process, the potential of annotations for deep learning can be greatly limited.

To tackle this challenge, this poster presents the design of an application – Social Annotation Synthesizer (SASy) – which aims to support the knowledge synthesis process in Web annotation activities. SASy is built upon a Web annotation application called *Hypothes.is*. After collaboratively annotating course readings using Hypothes.is, SASy allows students to further filter, connect and classify the annotations to generate knowledge syntheses that feed into other learning events (e.g., synchronous discussion and reflective writing). The design was rooted in CSCL literature which interprets learning as a socio-cognitive process when students are exchanging ideas and negotiating meanings collaboratively. SASy helps students connect scattered ideas contributed by the class through knowledge synthesis to help them rise above existing ideas.

Knowledge Synthesis

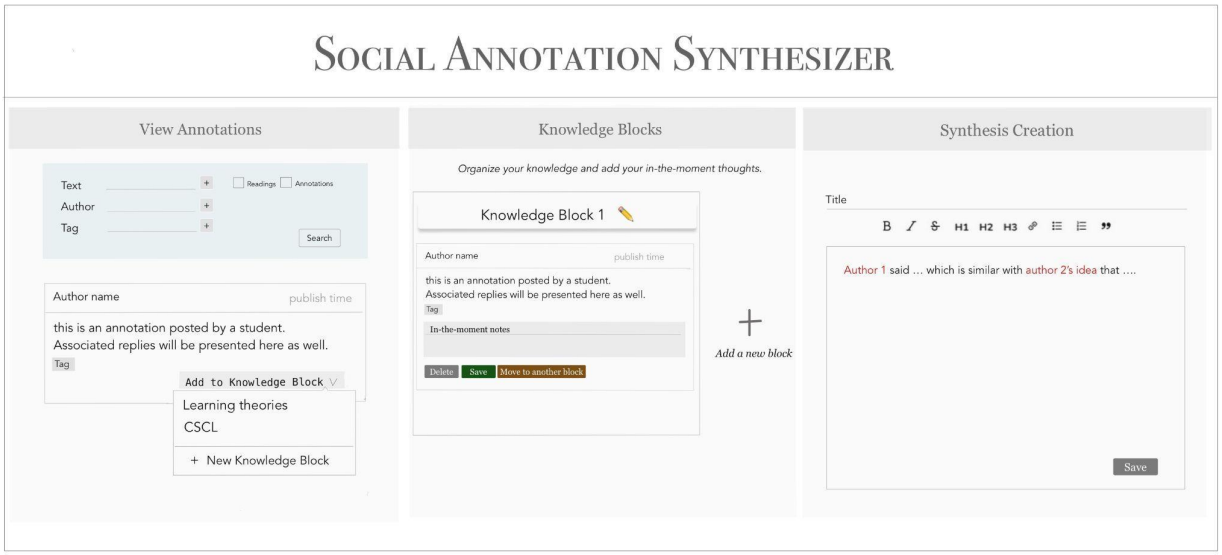
In the context of our design, we define synthesis as a process in which knowledge is constructed from a scattered form to a more integrated form (Qian et al., 2020). Qian and colleagues (2020) identified three kinds of intermediate synthesis products: in-source annotations, per-source summaries, and cross-source syntheses. DeSchryver (2014) suggested six strategies that are involved in synthesis making: (1) divergent keyword search, (2) synthesis for meaning, (3) in-the-moment insights, (4) repurposing, e.g., engaging learners to evolve the original ideas with their own added value, (5) reinforcement, e.g., justifying new ideas by revisiting the sources or further discussion with peers, and (6) note-taking. The above definition of synthesis and the strategies for synthesis making are intentionally integrated in the design and development of SASy.

The Design of SASy

SASy retrieves annotation data from Hypothes.is via its APIs. Once logging in, the student will first be asked to select a reading to begin with. The student will then be directed to the main page, where the annotations for the selected reading will be available to use. As Figure 1 displays, on the main page, SASy introduces three major functions arranged in three columns from left to right: "View Annotations" (VA), "Knowledge Blocks" (KB) and

"Synthesis Creation" (SC). This organization provides structured workspaces for students to decompose the tasks into intermediate synthesis products: in-source annotations, per-source summaries, and cross-source syntheses (Qian et al., 2020). The VA window provides an interactive space for students to filter and categorize the annotations made by the class. For each annotation, the student can send it to a self-defined Knowledge Block via the "Add to Knowledge Blocks" function. Students are given the opportunity to decide how annotations are categorized (e.g., by topic) as a way to engage in deep thinking. All annotations sent to the Knowledge Blocks will be displayed by blocks in the KB column. Under each Knowledge Block, students can add notes to each annotation as "in-the-moment notes", producing per-source summaries (i.e., the summary of one annotation) or cross-source syntheses (i.e., the synthesis of a few annotations). In addition, annotations can be relocated to a new Knowledge Block, which encourages students to repurpose and reinforce their learning by ruminating over the categories and revisiting the annotations/notes (DeSchryver, 2014). Finally, the SC column includes an interactive text editor where students can write their syntheses based on the Knowledge Blocks and in-the-moment notes. When composing the syntheses, students can refer to the annotations via direct links to retain the connections between ideas. Annotations associated with the links can be further previewed in popup windows by mouse-hovering the links.

Figure 1
Interface of Social Annotation Synthesizer



Next Steps

SASy is being developed right now and expected to be piloted in 2022. It can be used both individually and collaboratively to synthesize annotations made by class. We will co-design the SASy-enhanced collaborative activity with the instructors addressing their needs and contexts. Feedback and research data will be analyzed to evaluate the design for future improvement.

References

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