Exploration of the influence of instructional material annotation on “teaching and learning” by teachers and students

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Abstract: The grasp of main ideas as a learning strategy and activity can have various benefits on learners in different instructional objectives, such as reading comprehension, memory, and discerning the main points of reading content. A necessary condition for grasping main ideas is determining the importance of sentences [2]. Thus, this study attempts to explore the interaction of a reciprocal teaching digital annotation automatic matching system with teachers and learners, and how it affects learning activities. This study hopes to assist teachers in using computer systems to quickly assess how student groups are marking important points, and uses the computer to automatically evaluate the similarity between class markings and teacher markings, so that the teacher can have a general idea of how students have different markings from the teacher. This is used to understand students’ learning conditions and the distribution of their markings for later instructional discussion of important points, so that learners can receive better learning guidance in a limited period of time. The concept of the system in this study can allow the teachers and teaching assistants to provide timely assistance to learners in the teaching and learning process, and provide suitable support, with the objective of “internalizing” the development of learner ability development. The whole system concept proceeds in a digital learning environment, and serve as a learning motivation for learners and a direction for instructors to improve their teaching, so that they can achieve the purpose of offering individualized teaching.

Keywords: digital annotation, reciprocal teaching, instructional reflection

1. Introduction

Annotation is a common support behavior in learning. Based on the “meta cognition” theory and “reciprocal teaching” in psychology, this study attempts to explore the benefits of annotation on personal learning and the instructional process for teachers. In addition, it seeks to understand the current annotation systems and how they might be improved in the

context of a mature environment of electronic instructional materials.

- *Changes in learning environment and methods – electronic textbooks*
- *Paper digitization – electronic annotations*
- *Theoretical basis – metacognition and learning*
- *System prototype – reciprocal teaching*

Most systems for marking main points focus on individual learners, given them simple feedback of right and wrong, but there is no convenient method to quickly understand the distribution and ratios of incorrect or correct readings of instructional materials for all the learners, which would make it inconvenient for teachers to carry out instructional discussion and have a reference for instructional strategies. Thus, the objective of this study is to explore a digital annotation automatic matching system designed based on reciprocal teaching, and whether this has a positive or negative effect on interaction between teachers and students in the process of instruction.

2. Research Structure

2.1 Connection between annotation and learning process

In sum, annotations can serve to remind one of the important points, assist in memory, and record personal reflections. The ability of annotation and finding main points directly affects the quality and quantity of memory. Too much information that is too complex is also detrimental to memory. They can have good long-term memory after they accept signals and have effectively absorbed it.

2.2 Connection between annotations and instructors

Instructors can use the main points made by standard markers as standards, and use the automatic matching system to compare student annotations one by one to calculate the length of overlaps. After observing the distribution and the ratios, teachers can find specific annotators based on instructional priority for specific annotations, and engage in question instructional discussion and view all annotations and overall meaning, in order to modify instructional progress and depth, and to use instructional reflection to achieve the objective of customized instruction. It is hoped that this can give students the opportunity to learn self-supervision and thinking, and cultivate student techniques in meta cognition.

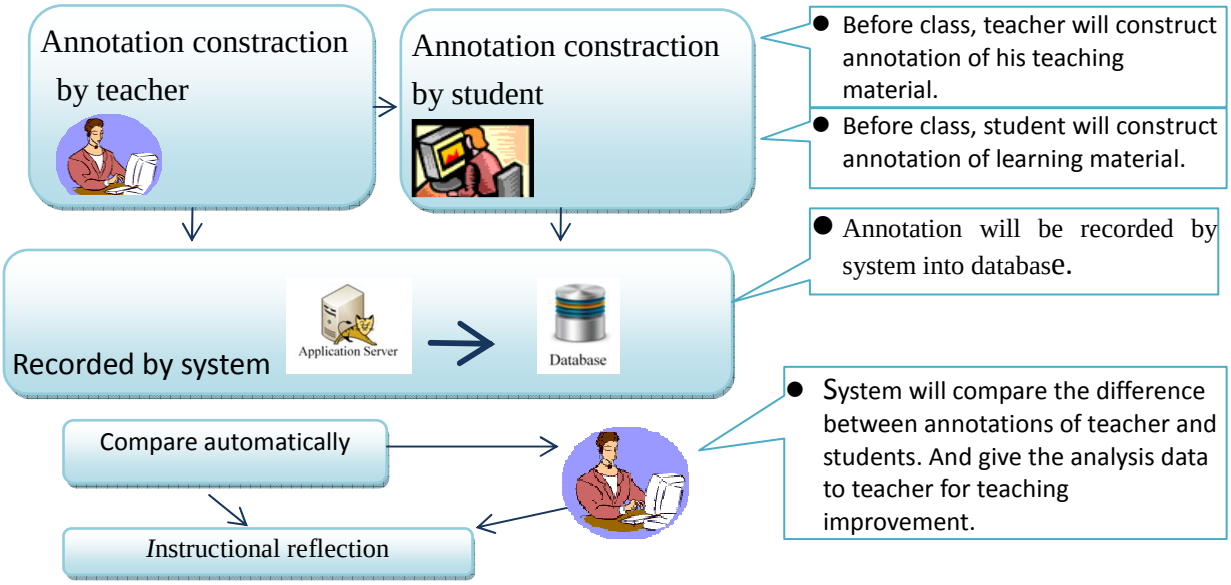
3. Research Method

This study mixes qualitative research and quantitative research, differing in the subjects and stages. In terms of teacher instruction, the first stage is an attitude questionnaire survey, collecting information about the types of subjects taught by teachers, the length of their teaching experience, whether they use annotations, and whether they agree with modifying instructional models based on students. The second stage carries out actual work on the system after the automatic annotation system is complete. After the course concludes, another attitude questionnaire survey will be administered, as well as individual in-depth interviews, which is used to understand whether this method benefits instruction and whether the system meets requirements in instruction.

A blended study of qualitative and quantitative is simultaneously conducted for students. This study evaluates whether the annotation system gave them learning

assistance, whether this type of instruction and learning produce positive or negative effects, and the psychological effects produced.

4. System prototype



5. Conclusions and Suggestions

This study designs an online reciprocal teaching annotation system to help students read electronic and digital instructional materials in real time. It is further hoped that this can help students to use system assistance tools to guide students in their active understanding of the meaning of instructional materials to enhance reading comprehension abilities, while giving students the opportunity to learn self-supervision and thinking, and cultivate student techniques in meta cognition. In addition, the teachers can track the learning process to obtain student behavioral data to understand which difficulties they are encountering in reading, as well as the support of which systems would enhance their reading comprehension in the process of prediction, clarification, posing questions, and finding important points.

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