Collaborative Writing SupportTools on the Cloud

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Abstract- Managing writing activities and providing feedback to students is very labor intensive and academics often opt out of including such learning experiences in their teaching. We describe the architecture for a new collaborative writing support environment used to embed such collaborative learning activities in engineering courses. IWrite provides tools for managing collaborative and individual writing assignments in large cohorts. It outsources the writing tools and the storage of student content to third party cloud-computing vendors(i.e., Google). We can describe how using machine learning and NLP techniques, the architecture provides automated feedback and automatic question generation, and process analysis features.

Index Terms- Accreditation Board in Engineering and Technology (ABET),Automatic Question Generation (AQG),latent semantic analysis (LSA)

I. INTRODUCTION

Writing is important in all knowledge-intensive professions. Engineers, for example, spend between 20 percent and 40 percent of their workday writing, a figure that increases with the responsibility of the position. It is often the case that much of the writing is done collaboratively .Collaboration and writing skills are so important that accreditation boards such as the Accreditation Board in Engineering and Technology (ABET) require evidence that graduates have the "ability to communicate effectively. Among the claimed positive effects of writing documents collaboratively are learning, socialization, creation of new ideas, and more understandable if not more effective documents This paper reports on an architecture for supporting CW that was designed with both pedagogical and software engineering principles in mind, and a first evaluation. The overall aim of the paper is to demonstrate how our system, called iWrite, effectively allows researchers and instructors to learn more about the students' writing activities, particularly about features of individual and group writing activities that correlate with quality outcomes.

II. IDENTIFY, RESEARCH AND COLLECT IDEA

This article reports on a survey of 162 recent engineering graduates about their writing experiences during co-op. Specifically, the survey obtained data about how much time they spent writing, to what extent they engaged in collaborative writing, what kinds of documents they wrote, and the purposes and audiences for those documents, whether they believed their employers valued writing ability, and what strategies they perceived as most helpful in learning to write like engineers. Data were analyzed in terms of engineering specialty and gender. The findings are presented, along with implications for teaching and future research

Select-a-Kibitzer is a computerized tool that gives feedback to students on their compositions in a unique way. The feedback is based on composition research which describes the process of writing as one of simultaneously solving multiple, possibly conflicting, constraints. In Select-a-Kibitzer, each constraint is personified by a different character. A student enters a composition into the tool and then asks for feedback. A variety of natural language processing techniques are used to analyze the text. Then, each of the characters gives feedback on the text from its particular point of view. Select-a-Kibitzer differs greatly from standard "style checker" mechanisms that focus on surface features of the text. By using Latent Semantic Analysis, Select-a-Kibitzer can address a wide range of meaning-oriented composition issues, including coherence, purpose, topic, and overall quality. This paper describes the composition research that forms the basis of the project t, and the interaction and implementation of Select-a-Kibitzer. It focuses on techniques for using LSA to provide feedback about the meaning of the composition.

This article identifies problems in the computer-supported group writing of MBA students who are both novice strategic report writers and novice users of technology that supports group work. These problems consist of lack of attention to readers' needs, attitudes, and expectations; poor conflict management; leadership problems; genre confusion; shaky definition of the strategic problem; poor commitment and attitudes toward use of new technology; poor computer policies and practices; and conflicting hardware and software preferences. The article suggests several reasons for these problems, draws implications for instruction of computer-supported group writing, and suggests topics for further research.

In the COSAR-project a previous term computer - supported next term collaborative learning environment enables students to collaborate in writing an argumentative essay. The TC3 groupware environment (TC3: Text Composer, previous term Computer supported next term and Collaborative) offers access to relevant information sources, a private notepad, a chat facility including a chat history, and a shared word-processor. Planning tools for writing a shared argumentation diagram for content generation and a shared outline facility for content linearization were added to the basic TC3 environment. About 145 pairs of high school students completed essays on organ donation or cloning in the TC3 environment. We analyzed the logged discussion (chats) and activity protocols for task-related previous term processes next term present during discussion and collaboration. Previous term Processes next term looked into are planning, gathering information and composing the essay, as well as collaborative previous term processes next term such as coordinating, turn taking and time management. Our main research question is how task-related planning activities and collaborative previous term coordination next term with or without the help of planning tools relate to the quality of the resulting argumentative texts. Overall previous term coordination next term and planning of the writing activities on a meta-level and on a content level were found to be crucial for the quality of text.

III. RELATED STUDIES

Glosser: Automatic Feedback Tool Glosser is intended to facilitate the review of academic writing by providing feedback on the textual features of a document, such as coherence. The design of Glosser provides a framework for scaffolding feedback through the use of text mining techniques to identify relevant features for analysis in combination with a set of trigger questions to help prompt reflection. The framework provides an extensible plug-in architecture, which allows for new types of feedback tools to be easily developed and put into production. Glosser provides feedback on the current revision of a document as well as feedback on how the document has collaboratively progressed to its current state. Each time Glosser is accessed, any new revisions of a document are downloaded from Google Docs for analysis. The feedback provided by Glosser helps a student to review a document by highlighting the types of features aDocument uses to communicate, such as the keywords and topics it includes, and the flow of its content. The highlighted features are focused on improving a document by relating them to common problems in academic writing. Glosser is not intended to give a definitive answer on what is good or bad about a document. The feedback highlights what the writers of a document have done, but does not attempt to make any comparison to what it expects an ideal document should be. It is ultimately up to the user to decide whether the highlighted features have been appropriately used in the document. Glosser has also been designed to support collaborative writing. By analyzing the content and author of each document revision, it is possible to determine which author contributed which sentence or paragraph and how these contribute to the overall topics of the document. These collaborative features of Glosser can help a team understand how each member is participating in the writing process. The trigger questions at the
Top of each page are provided to help the reader focus their evaluation on different features of the document. Below the questions is the supportive content called “gloss”, to help the reader answer those questions. The “gloss” is the important feature that Glosser has highlighted in the document for reflection. A rollover window on each sentence indicates who and when wrote it.

Summary Street is educational software based on latent semantic analysis (LSA), a computer method for representing the content of texts. The classroom trial described here demonstrates the power of LSA to support an educational goal by providing automatic feedback on the content of students' summaries. Summary Street provides this feedback in an easy-to-grasp, graphic display that helps students to improve their writing across multiple cycles of writing and revision on their own before receiving a teacher's final evaluation. The software thus has the potential to provide students with extensive writing practice without increasing the teacher's workload. In classroom trials 6th-grade students not only wrote better summaries when receiving content-based feedback from Summary Street, but also spent more than twice as long engaged in the writing task. Specifically, their summaries were characterized by a more balanced coverage of the content than summaries composed without this feedback. Greater improvement in content scores was observed with texts that were difficult to summarize. Classroom implementation of Summary Street is discussed, including suggestions for instructional activities beyond summary writing.

IV. CONCLUSION

The architecture for iWrite, a CSCL system for supporting academic writing skills has been described. The system provides features for managing assignments, group and peer-reviewing activities. It also provides the infrastructure for automatic mirroring feedback including different forms of document visualization, group activity, and automatic question generation. The paper has focused on the theoretical framework and literature that underpins our project. Although not a complete survey of the extensive literature in the area, it highlights aspects that later supported architectural decisions. A key design aspect was the use of cloud computing writing tools and their APIs to build tools that make it seamless for students to write collaboratively either synchronously or asynchronously. A second design guideline was that data mining tools should have access to the document at any point in time to be able to provide real time automatic feedback.

We described aspects of its use with large cohorts, and comments from students and administrators. While an evaluation of the system's impact on learning and the students' perceptions of writing are outside the scope of this paper, we analyzed student use of iWrite in relation to student performance and found that the best predictors for high performance are the way students use iWrite, not necessarily whether they used the tool.

REFERENCES

[1]M.L. Kreth, "A Survey of the Co-Op Writing Experiences of Recent Engineering Graduates," IEEE Trans. Professional Comm., vol. 43, no. 2, pp. 137-152, June 2000.

[2] L.S. Ede and A.A. Lunsford, Singular Texts/Plural Authors: Perspectives on Collaborative Writing. Southern Illinois Univ., 1992.

[3]G.A. Cross, Forming the Collective Mind: A Conceptual Exploration of Large-Scale Collaborative Writing in Industry. Hampton, 2001.

Modern Language Association, E.C. Thiesmeyer and J.E. Thiesmeyer, eds., 1990.

[4] T.J. Beals, "Between Teachers and Computers: Does Text-Checking Software Really Improve Student Writing?" English J. Nat'l Council of Teachers of English, vol. 87, pp. 67-72, 1998.

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