CO-OP Writing For Engineering Graduates with Cloud Support

L. Maria Michael Visuvasam  
Assistant Professor  
Velammal Institute of Technology, Chennai

J. Indra Mercy  
M.E., Student, Saveetha Engineering College, Chennai

S. Selvakannmani  
Assistant Professor  
Velammal Institute of Technology, Chennai

K. Kalpana  
Assistant Professor  
Velammal Institute of Technology, Chennai

S. Soundararajan  
Associate Professor  
Velammal Institute of Technology, Chennai

ABSTRACT

Writing activities are an integral part of any college student. Nowadays students have to create a single document having different modules collaboratively. Our system describes the architecture for a new collaborative writing support environment which will be used for such collaborative writing activities. The tool iWrite provides functionality for managing collaborative and individual writing assignments with cloud support. It provides two different modes of collaborative writing namely synchronous and asynchronous. It also outsources the writing tool and the storage of student content to a third party cloud-computing vendor. Cloud computing enables on demand access of resources and reduces the burden of local hardware and software management. The overall aim of the project is to successfully develop a tool which can be effectively used by the students and professors in improving the quality of collaborative work.

Keywords

Co-op Writing, Cloud, iWrite.

1. INTRODUCTION

Writing to communicate is an essential academic and professional, and a engineering education should help prepare students for the kinds of writing common to the professional life. 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. Using this Collaborative writer can produce an efficient writing result.

The evaluation provides data collected in general classroom activities and writing assignments (individual and collaborative), using mainstream tools yet allowing for new intelligent support tools to be integrated. These tools include automated feedback, document visualizations, and automatically generated questions to trigger reflection.

A combination of synchronous and asynchronous modes of CW is used. The use of computer-based text analysis methods to provide additional information on text surface level and concept level for writing groups is also provided.

The main goal of our project 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.

2. RELEVANT RESEARCH

A questionnaire was designed for quantitative survey. The questionnaire was completed by users who have been using Thinkfree doc for educational collaborative work. Positive and negative feedbacks regarding software’s usage were recorded. The results revealed that the overall systems response is very slow[1]. After analysis we can understand the disadvantages of the existing collaborative writing tool which is lack of features like synchronization offline tool for collaborative work. We design such a synchronization tool for our co-op writing tool.

Latent Semantic Analysis (LSA) is an information retrieval technique used for automated essay grading. The traditional word-by-document matrix creation of LSA does not consider word sequence in a document. In GLSA n-gram by document matrix is created instead of a word by document matrix of LSA[2].

This study developed a web-based online synchronous collaborative writing revision instrument for collaborative writing revision. The user can freely switch between the annotation mode and the review mode to neatly review the “right” article after correction without showing the correction marks to reduce the problem of cognitive overload [3]. By using this project we can understand how to create a review tool with which users can collaboratively make corrective feedback and error corrections on digitized documents in a synchronous environment. This article reports on a survey of 162 recent engineering graduates about their writing experiences during co-op. 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, what strategies they perceived as most helpful in learning to write like engineers [4]. 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. The expectation is that more mutual coordinating activities in the dialogue result in a more consistent shared knowledge.
structure, a better mutual problem solving and thus a better argumentative essay is created availability and proper use of this planning tool have a positive effect on the dialogue structure, on coordination processes of focusing and argumentation, as well as on text quality. [5]

Most of the CW performed in a professional context is done using tools such as Microsoft Word following certain patterns, many of which have not changed much in the last two decades. These patterns have been described by their document control methods (centralized, relay, independent, and shared) and the writing strategies used (single and separate writers, scribe, joint writing, and consulted). Commonly used patterns, such as when the different members of a group work on different parts of the document lack concurrency, and require many files to be emailed between authors, often leading to problems in the collaboration process.

This paper reports on 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. The evaluation provides data collected in general classroom activities and writing assignments (individual and collaborative), using mainstream tools yet allowing for new intelligent support tools to be integrated.

3. SYSTEM ARCHITECTURE
This architecture diagram shows how our writing tool is going to perform as a collaborative writing tool on cloud. This architecture diagram is used to show how our system is going to perform in synchronized and a-synchronized pattern document developing.

4. WRITING PROCESS
The writing processes followed by students in different activities (or subjects) reflect their understanding of what is expected in the activity, their motivation and other educational factors. Often students’ behaviour during an activity can be different from what instructors expect, and this variation may raise issues on how the activity is designed. We computed a number of variables that could be expected to have an impact on the composition’s quality, and therefore their grades.

glosserPageViews: a measure of how much a student has used Glosser, the automatic feedback tool. This was only available to students in ELEC3610. This information may help determine the impact of automatic feedback tools.

iwritePageViews: how much a student has used iWrite, while writing, reviewing or reading instructional material on aspects of writing. This information could be broken down to study the impact of different content sections. The traffic on a particular part of the site could be reported to the instructor to indicate whether students are using content specifically designed to support the activity.

userRevisions: while a student is writing, Google Docs automatically saves every 30 seconds or so. This is a measure for the amount of time a student spent typing. Writing time could include time reflecting or reading where revisions are not stored. This measure gives the instructor an accurate estimate of how much time students at the individual, group or cohort level are spending in the activity.

teamRevisions: total number of revisions for the document, including those by the different team members. It is the same as userRevisions in individual assignments.

correlation: the ratio teamSize _ userRevisions= teamRevisions indicates the relative contribution of the individual student to the assignment. This measure is close to zero if the user contributed little, less than one is if they contributed less than their fair share and more otherwise.

durationDays: the number of days spanning from the first revision to the last. Often the assumption is that starting early is good. This measure can provide evidence on the circumstances under which this assumption is true.

sessionsWriting: the number of sessions a student worked on a document. A new session starts if a student has not modified the document for 30 minutes.

revisionsPerSession: the number of revisions is proportional to the time that the student works on a document in a single session. This information could help estimate the optimum amount of time a student can work on a document without taking a break. This measure together with sessionsWriting can for example describe if a student, or a group, tends to write in many brief sessions or fewer longer ones. Finer granularity could also be used to see such patterns of writing “sprints” within a session, for example when a writer puts down an idea as stream of thoughts and then goes quiet (e.g., reflects) and comes back to fix what was just written.

daysWriting: the student might have started early but then did nothing until close to the deadline. This measures the number of days in which some work was done.

revisionsPerDay: this measures how much work was done by a student in a single day.

Figure 1. System Architecture
gradeActivity: the grade obtained by a student in the particular writing activity (out of 100).

gradeOverall: the overall grade obtained by a student in the subject (out of 100).

The averages for all students, including those who did not contribute to the group submission (zero revisions), using the system for collaborative assignments, and the averages for a selected subset of activities. We can see that usage patterns change between activities in the same class. Comparing PSD1 and PSD2, for instance, on average students spent less time writing/revising the PSD2 document (234 revisions) than the PSD1 document (517 revisions). They used the automatic feedback tool more in the second assignment: 4 glosserPageViews for PSD1 and 18 for PSD2. Both of these results are what were expected by the instructors.

The total amount of time students spend working on the assignment, and how the time is distributed, can provide useful information to detect successful writing processes. For example, if all the work is done in the last few hours before the assignment is due, we would expect this process to lead to lower quality outcomes. If the project is collaborative, the need for an early start should be even higher, since team members need to find common ground and agreement on the topic, structure and other aspects of the composition.

In the case of the individual assignment, the majority of the students did not begin writing in Google Docs until the last couple of days before the deadline, when students made an average of 16 and 33 revisions. This compares to less than two revisions per student per day in the 13 days prior. Looking at the data, it was found that the majority of students made less than 20 revisions to their documents, while a minority of more active students accounted for the majority of the total revisions committed. This is likely due to the fact that some students chose to write their assignments using an alternative word processor and then copied and pasted their work into Google Docs for submission.

Figure 2. A plot comparing the average number of revisions written per student per day for an individual (ENGG1803) and a collaborative (ELEC3610) assignment.

Reasons for this behaviour include 1) the fact that they are more accustomed to desktop word processor applications, such as Microsoft Word and OpenOffice, 2) the lack in GoogleDocs of a bibliography package (e.g., Endnote) required in one of the courses, and 3) concerns about working offline on a web application.

However, contrary to the above, it was found that students working on collaborative assignments made much more consistent use of Google Docs. The reasons for this are believed to be twofold. First, the superior collaborative functionality of Google Docs allows multiple students to synchronously work on the same document at the same time. Second, accessibility of the document through the Glosser tool meant that authorship of the different keywords, sentences, paragraphs, and topics of the document could be attributed to individual students and highlighted for all to see. This made the extent and value of individual participation in the collaborative writing process more transparent to all.

5. APPLICATIONS

CW writing on cloud is used for students to write a document collaboratively. These tools include automated feedback, document visualizations, and automatically generated questions to trigger reflection. In particular, the evaluation shows how data on the process of writing (and its outcomes) can be collected on real-world writing tools rather than in laboratory-type scenarios, highlighting that it is the way the tools are used (not the fact that they are) that has an impact on outcomes.

Retrieving Full Document

This application is very useful for students to develop a document collaboratively. Among the claimed positive effects of writing documents collaboratively are learning, socialization, creation of new ideas, and more understandable

iWrite is currently used to support the teaching of academic writing at the Faculty of Engineering and IT, the University of Sydney.

Retrieving Second Stage Document: Other researchers have used techniques similar to those used in Glosser for Automatic Essay Assessment for building writing support tools. The “iWrite” website provides students with information about their writing activities, tools for writing and submitting their assignments, and a complete solution for scaffolding the write-review-feedback cycle of a writing activity.

Retrieving Efficient Result: The Assignment Manager is designed to use cloud computing applications and their APIs. This means that the writing tool and the documents themselves are managed by a third party. This significantly reduces the cost of managing a system with large number of students, and a Service Level Agreement (SLA) ensures that assignment documents are always available.

6. FUTURE ENHANCEMENTS

This is an important finding that gives clear design guidelines for teachers as well as explicit good writing practices for students. Our future evaluation work will include showing this type of statistical information to instructors and inquire if the values are what they expected and how these data can be used to inform their pedagogical designs. And also we have to focus on document alignment in a-synchronized pattern. And also concentrate on cloud document backup maintenance and service providence.

7. CONCLUSION

This paper reports on 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. The evaluation provides data collected in general classroom activities and writing assignments (individual and collaborative), using mainstream tools yet allowing for new intelligent support tools to be integrated.

8. REFERENCES

[1]. Usability Evaluation of Web Office Applications in Collaborative Writing - Muhammad Afsar Khan, Nauman Israr, Sher Hassan (2010)


