

Peer Feedback in Academic Writing Using Google Docs

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Abstract—This paper describes a method for students to give each other written feedback in academic writing using a Google Docs as a Social Annotation (SA) tool. Student attitudes to using this method has been evaluated, along with their attitudes towards using digital documents as opposed to paper based documents in various education related situations. The results show that the method described was highly appreciated, and furthermore showed that the students in the study already read digitally distributed documents on screen rather than printing them, and that they were very positive to using digital documents rather than paper based documents. It is argued that the method used can be generalized to other kinds of document based discussions such as seminars discussing papers, and that the positive attitude towards using digital documents can be further increased with current and upcoming technical solutions such as HTML5 and the iPad.

Index Terms—Google Docs, iPad, Peer Feedback Marking, Social Annotation Tools, Technology Enhanced Learning

I. INTRODUCTION

ACADEMIC writing is an important part of university education, which covers many goals such as critical thinking, methodological awareness, analysis and writing skills to mention a few. Using Peer Assessment can have many advantages in academic writing [1–3]. This paper investigates if a version of Peer Feedback Marking (PFM) [4], a formative version of peer assessment, can be improved by using a social annotation (SA) tool such as Google Docs. The main arguments for introducing a technical tool in general, and Google Docs in particular, in PFM are the ease of adoption by students and teachers, comments in context, and increased interaction among the students in giving feedback.

Annotations refer to “marks on (or attached to) reading matter” [5], and can include underlining, highlighting and comments. This is contrasted to notes which “mean marks that are not co-located with the text to which they refer” [5]. Social annotation tools add a collaboration aspect to annotations, which allows users to share, interact and collaborate on annotations attached to documents [6].

In a comprehensive literature review of current research into use of SA technology for learning purposes, a list of recommendations is presented [6]. Four of six items on the list are related to the necessity of having an easy-to-use SA system. Therefore, finding such an environment would be

highly relevant, and due to its wide spread, Google Docs is an interesting candidate environment to investigate. Furthermore since annotating on electronic documents rather than on paper is necessary in any SA system, the students’ possible willingness to abandon paper is also highly relevant.

Therefore, the research questions this paper investigates are

- What are the student’s attitudes to using Google Docs for PFM?
- What are the student’s attitudes to the use of screen vs. paper when reading documents?

And on a more analytical level

- Which effects can recent and upcoming technical developments have on the above two questions?

II. RESEARCH DESIGN AND METHOD

This study is based on data collected when using Google Docs for PFM in a B.Sc. degree project course in media technology. 76 students participated in the course. 74 of these wrote their degree project report in pairs and two chose to write individual reports, thereby making the total number of reports 39. Of these 37 were completed on time.

The degree projects were supervised using group supervision, where four or five projects were assigned to an academic supervisor, for a total of eight groups. The group supervision consisted of seven roughly bi-weekly meetings per group. Before each meeting the students should work on different parts of their reports, such as research questions, literature review and methodology. Before the actual meeting the students should hand in the text they had worked on and give written PFM to all other participants in the group. The groups had the freedom to choose whether they wanted to give feedback using the group’s thread based forum in the university’s Learning Management System, or to use Google Docs for in-document feedback. Seven out of eight groups chose to use Google Docs.

After the course had finished, the PFM activity was evaluated using a questionnaire with both closed and open questions, which was answered by 60% of the students. Furthermore, the activity was discussed in six focus groups, each consisting of one or two students participating in the course who discussed their experiences with four to six other students. These discussions were recorded. Finally, informal interviews were conducted with most of the supervisors.

The screenshot shows a Google Docs interface. The document title is "Background and theories". The text in the document includes:

gamification, that all can be interesting in combination with mobile learning. Finally we will go through theories for designing a mobile application.

2.1 E-learning
This report mainly focuses on mobile learning, also called m-learning. In order to understand this term one must have basic knowledge about e-learning as well since many definitions of m-learning include comparison to e-learning.

E-learning is an American term which has been used for about 20 years, the phenomena itself is much older though (Boström 2011). E-learning comprises all forms of electronically supported interactive learning and teaching, both with and without access to the Internet. It includes all learning supported by PCs, laptops, CDROMs and so forth.

According to Traxler (2005) some of the core characteristics of e-learning are that it is: media-rich, structured, massive, intelligent and/or interactive. This is relevant in order to compare with the main characteristics of m-learning.

2.2 Mobile learning
Even though mobile learning today is a widespread concept it still lacks an exact definition.

In John Traxler's *Learning in a mobile age* (2009) he discusses several different definitions made by himself and others in the field. Eg. Desmond Keegan (2005) argues that m-learning should be restricted to "learning on devices which a lady can carry in her handbag or a gentleman can carry in his pocket" focusing on the device used for learning

The comment sidebar on the right shows several comments:

- A comment from an unnamed user: "De är väl bra med lite meta, men jag håller med Axel. Tycker rubrikerna ger bra inblick i vad som komma skall."
- A comment from Axel Hammarbäck (6:16 PM Mar 13): "Det här gillar jag, det leder liksom in läsaren direkt, typ "okej, det här kommer att hända". Det känns tryggt!"
- A comment from Björn Hedin (10:07 AM Mar 14): "Jepp, bra att ni kort och koncist förklarar varför det ni skriver är relevant i rapporten! Edit Delete"
- A comment from Mikael Juntti (10:21 PM Mar 13): "Här kanske det kan tilläggas lite förklarande text. Vad menas med hyper-linked t.ex.?"
- A comment from bobbyfalck (11:05 AM Mar 13): (No text visible)

Fig. 1. Example of the SA functions used in Google Docs in this study. Note how the highlighted comment is also highlighted in the text.

III. THE SYSTEM AND PROCEDURE USED

Google Docs is a part of Google Drive, and is in essence an office package, which can be used within a web browser. It allows for creation and editing of new documents, as well as importing documents written in common word processing formats, which then becomes editable. A notable exception is pdf-files, which even though they can be imported lose most of its formatting. This however can be handled by other systems such as Crocodoc Personal, which is covered in the discussion part of this paper. Documents in Google Docs can be shared between any number of people, which allows collaborative simultaneous editing. Documents can also be shared as read-only and, which is used in this case, with the possibility to collaboratively read, highlight, add comments and reply to comments, but without allowing others to edit the actual document.

Figure 1 shows an example of how Google Docs was used in the course. In the groups the procedure was that the students either worked on their texts using a word processor and then uploaded the text to Google Docs, or as in most cases, the students worked on their text directly in Google Docs. The text was then shared with the other members of the groups and the supervisor, who all got rights to comment but not edit.

Most groups followed the routine that after the deadline, the students were given a few days to comment on each other's texts before the supervisor started to comment and reply to comments. This was done since we wanted to encourage students to give active feedback, and our experience was that a teacher's comments can be seen as "the final solution" which

can dampen the willingness of the students to comment further. Next the group got together in a seminar where the texts and the comments were discussed and plans were made for what to do and how to progress until the next deadline. After the first few seminars, most groups started to use a projector to show the commented document to the whole group, so it was easy to follow. Informal interviews with the supervisors confirmed that this led to much better seminars, where everyone could focus on the discussion rather than trying to find which part of the text was discussed.

IV. RESULTS

The results from the questionnaire, which was answered by 46 of 77 students, clearly showed that most students liked using Google Docs for peer feedback, and that they thought the feedback they got was useful. A number of results follow:

When writing individual reports 10.9% of the students preferred Google Docs over traditional word processors. However, for group- or pair reports 88.6% of the respondents preferred to use Google Docs over other solutions. This highlights that Google Docs was actually considered a superior collaborative writing tool among this group of students, which is very important since a low threshold for use is essential for the success of an SA system [6], and since using one single system both for writing and PFM rather than two separate systems further lowers thresholds for initiating PFM activities. The free text comments show that the main reasons for using Google Docs was the possibility to collaborate, followed by the anywhere-access to documents

supplied by a cloud-based solution. The main reasons not to use Google Docs was the limited ability to format texts exactly as desired and the better dictionaries supplied in Microsoft Word.

Another question was, "If given a pdf-file to read before a seminar, how often do you read it on screen compared to printing it on paper. 33.3% used screen 100% of the time, 35.6% used screen 80% screen of the time, 15.6% used screen 60% screen of the time, 13.3% used screen 40% of the time, 0% used screen 20% of the time and 2.3% (one respondent) never read on screen. Of the 26 free-text comments on in why and when paper was preferred, 8 mentioned better possibilities to annotate the text, and most mentioned a better reading experience, especially for longer texts. Of the 36 free-text comments on why and when reading on screen was preferred, most related to that it was simpler to read it on a screen than to print it, environmental aspects, the ability to search in the texts and easier to organize files than paper.

The high use of reading on screen was interesting in combination with the results that the student thought commenting on texts using Google Docs was very easy. On the question "How easy is it to comment using Google Docs", which was graded on a scale of 1 (very difficult) to 5 (very easy), 55.8% answered 5, 37.2% answered 4 and 7% answered 2. This again gives support to the claim that Google Docs is an easy-to-use SA tool.

The usefulness of getting written peer feedback, written supervisor feedback and oral feedback during seminars was also evaluated. One group was excluded from the results since they didn't get written feedback from the supervisor. On a scale of 1-5, with 5 being the best score, the written peer feedback, written supervisor feedback and oral feedback during the seminars scored 3.61 ($\sigma = 0.86$), 4.32 ($\sigma = 0.87$) and 3.65 ($\sigma = 1.10$) respectively. 4 student thought the written group feedback was more useful than the written supervisor feedback, 21 students thought the written supervisor feedback was better than the written group feedback, and the remaining 13 students thought they were equally useful. The usefulness of *giving* written feedback was not evaluated, but is believed to be substantial since assessing others is a good way to learn as per the research on peer assessment [2].

On the question "Is it in your opinion best to comment on reports directly the document (as in Google Docs) or in a separate threaded forum (eg like in [our LMS])", again a clear majority preferred Google Docs. On a scale where 1 = Clearly Google Docs, and 5 = Clearly threaded forums, 69.6% of the students chose 1 (clearly Google Docs), 19.6% chose 2, 6.5% chose 3, 2.2% chose 4 and 2.2% chose 5. Of the 15 free-text comments, 10 mentioned the advantage of seeing comments directly in its context by marking the section the comment concerns. One particularly interesting comment was "Many times, entire conversations developed from a comment, which was very rewarding". This view was supported by the interviews with the supervisors and the focus group meetings. Another comment also mentioned that it was easier to comment from a tablet or mobile phone using Google Docs than using a separate forum.

V. DISCUSSION

This study shows that using Google Docs as an SA tool for peer feedback in academic writing is considered very useful by the students in the study. Annotating the documents on screen was not considered difficult, contrary to other previous studies [7]. One explanation to this could be that the types of annotations used were mainly text-based comments connected to a particular section of the text, and were intended for communication. Another explanation might of course be that Google Docs is actually a very good tool for annotating texts.

The high acceptance for reading electronic texts is also interesting, especially in light of the rapid development of tablets like the iPad. Recent studies on reading on iPads vs paper vs computer screen indicates that user satisfaction is as high or even higher on an iPad than on paper, and much higher than on computer screen [8], [9]. Reading speed is also almost as high on an iPad as on paper [8], and highlighting is considered easier on an iPad than on paper [9], even though other kinds of annotations were found to be more difficult [8]. Recent development has also provided much higher resolution displays, pen-based annotation capabilities, and displays with sunlight readability. This, together with dropping prices, would indicate that satisfaction with reading and annotating on such tablet devices would be even higher than this study indicates from reading and commenting on computers.

Generalizing the experiences from this study to other kinds of seminars discussing digital texts is also possible. A problem in this case could be that many scientific texts, which are often used as basis for discussions for seminars, are only available in pdf format, which is a format that Google Docs handles relatively poorly. There are however other solutions like Crocodoc Personal, which handles this with ease using HTML5, and it is likely just a question of time before other solutions have the same functionality.

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