COLLABORATIVE LEARNING AS PEER REVIEW IN ONLINE AND DISTANCE EDUCATION

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Abstract

This paper draws upon findings from an analysis of the written feedback produced by a group of Swedish University students acting as peer reviewers. The study aims to identify what type of feedback the students provided for each other, in order to gain some preliminary insights into if and how peer review preceded by collaborative criteria processing could contribute to learning. The two dominant feedback patterns were "reinforcing" and "suggestive" while "corrective" and "didactic" were less common.

Introduction

The study reported in this paper derives from a distance course in a collaborative project between three departments of Education in Sweden with the goal to implement and evaluate peer assessment as peer review in our online courses. We chose to implement formative peer assessment, "assessment for learning," arranged as peer review preceded by a discussion of the criteria. The different steps are designed to serves as tools to enhance student learning.

Previous analysis of data from this course shows a high student engagement in the peer review activities. A majority of the students found participating in peer review highly valuable for their learning process and their understanding of scientific knowledge building (Liljeström, 2008, in press; Liljeström, Hult & Stödberg, 2008).

In this paper we will share more of our experiences of how peer assessment can work as a tool to enhance student learning. We will begin by offering a brief background to the decision to implement and evaluate peer assessment on our distance and online courses. We will also describe some of the principles of our design of the peer assessment element and the context in which our model was put in use. Finally we will offer some findings from the implementation in the Special Needs Teacher Programme. Data for this study was collected from a message board facilitated in FirstClass, with a focus on the nature of how the students approached the task of peer review:

- What kind of feedback did the students provide for each other?
- Were the comments limited to narrow details or did they open up for reflection and discussion?

Background

The sociocultural approach to cognitive development has gained ground in recent years and is often present when setting the scene for online and distance learning. Simultaneously, current international educational discourse raises the demand for extremely fine-grained approaches to measuring student achievement in combination with "a strong social drive to help learners, some with histories of spectacular 'unsuccess,' to obtain qualification" (Sadler, 2007). Also, the focus of assessment is shifting from assessing the reproduction of knowledge to higher order skills (Dysthe, 2004), in agreement with the expected role of higher education as producer of "self-regulated learners" (Steffens, 2006) and by helping the students develop useful tools for lifelong and "sustainable" (e.g. Boud, 2003) learning. A shift that reflects a new view of society "the society of tomorrow will require people who are flexible and able to continue to acquire new knowledge and learn new skills" (Dysthe, 2004, p. 3).

Measuring up to the demands listed above, while at the same time trying to set the scene for learning based on sociocultural theory is challenging enough in on-campus education. The teachers are often restrained by limited resources when carrying out educational assessment with large study groups. This also often means designing teaching and learning tasks for a highly heterogeneous mixture of students with regard to age, life situations, and study backgrounds. Some students enter a course with a "world view" so different from the views within the academy that they have trouble identifying what they are supposed to achieve when, for example, writing an academic text (Bizzell,1986; Hayes et al., 1986). These students may need a great deal of support and guidance to be able to crack the codes for how they are supposed to approach their assessment tasks.

While facing the same combination of limited resources, large, heterogenic study groups and internal and external demands, teachers of online and distance education also very seldom, if at all, get to meet their students face to face. Many of the online students are alone in their studies, wrestling with trying to figure out what they have to learn and perform to pass their exams. As they seldom or never visit the campus, they don't have access to artefacts and contact with staff members and others who represent the academy and the institution providing their education. This might make it even harder for this category of students than for campus students to develop an understanding of the academic tradition within which they have to communicate when doing their coursework. Therefore it is

important to develop strategies to support online and distance students to become familiar with what learning at university level means, thus helping them to direct their studies towards successful learning results.

As previous studies of assessment have shown a strong relationship between assessment and what and how students learn (e.g. Becker, 1968; Miller & Parlett, 1978) a fundamental conclusion is that assessment is essential to student learning. This has also served as a starting point for our search for helpful tools to support student learning.

Formative assessment can help the students understand how to direct their learning towards expected learning outcomes. However, warnings should be raised about the current trend of formative and criteria-based education which at worst could create more teacher-dependent students and reductionist learning where the intended learning is displaced by procedural compliance (e.g. Sadler, 2005, 2008, 2009; Torrance, 2007).

Peer review, when preceded by discussion and interpretation of the criteria to enhance the students' ability to give relevant and qualified feedback, seemed to be a possible way to overcome these risks. The idea of learning through collaborative activities such as interpreting, negotiating and applying criteria to support each other's learning also seemed to correspond to sociocultural learning theory.

Reviewing the work of peers might reduce the risk of replacing learning with procedural compliance, since the students will face a variety of approaches to solve the same task. Previous studies of peer assessment have shown that engaging students in formative peer assessment sustains the idea of autonomous, independent and self-directed learners who take responsibility for their own personal and professional development and direct their learning towards successful achievement (e.g. Anderson et al., 2001; Bloxham & West, 2004; Boud, 2002; Higgins, Hartley, & Skelton, 2002; Lorraine & Stefani, 1998; Macpherson, 1999; O'Donovan et al., 2004; McLuckie & Topping, 2004).

Peer-review Design

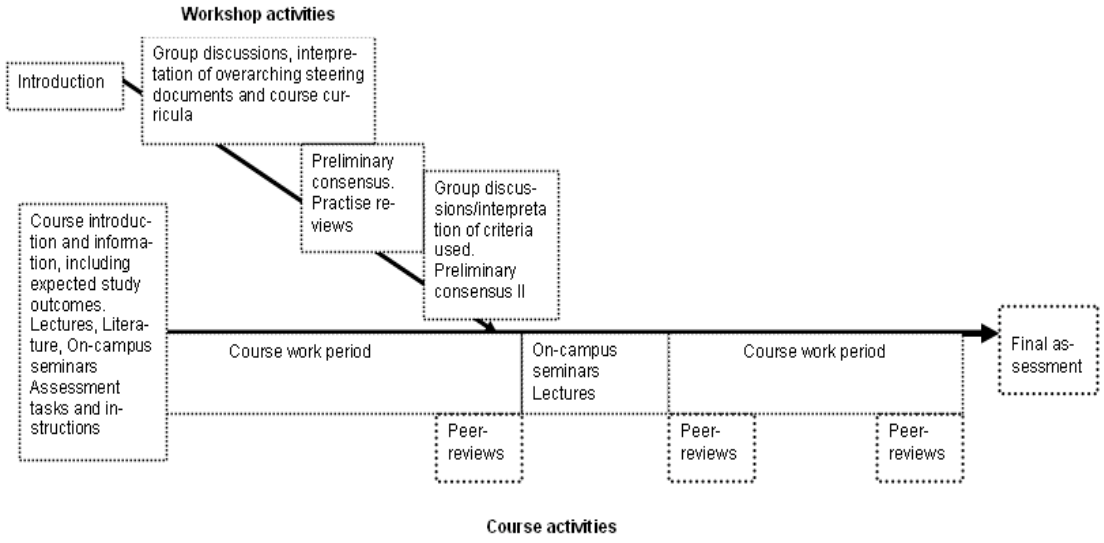
The students were prepared for peer review through asynchronous, written communication organised as workshops. Since the study programme was delivered using FirstClass, they were familiar with this platform from earlier courses. At this stage of the project it was the concept of peer review preceded by discussion and interpretation of the criteria that we primarily wanted to test. We designed the workshop so that it would not interfere too much with the original structure of the course or the two pre-planned assessment tasks.

The students were already assigned to smaller study groups varying from 4–8 participants. Each group had their own discussion forum.

The pre-planned assessment task was to outline a pedagogical issue of interest for their future profession, and to plan and conduct a field study on this matter to be presented in the form of a written 10-page research report. One task was also to create a portfolio of literature and lecture comments including a self evaluation in which they discussed their learning process.

The only adjustment made to these tasks was that we asked the students to take into account the workshop discussions (see Figure 1) in their self evaluation, and exemplify how they and others had contributed to the learning process. The purpose of this was to stimulate participation in the workshop without setting up rules for how many postings they had to contribute with. We wanted to see if the task itself could provide sufficient motivation to keep the students active in the workshop activities.

Figure 1: Workshop and Course Activities



The ideas behind the peer assessment were introduced briefly at the course introduction and further instructions were carried out in the workshop at the beginning of the period of course work. The students were tutored with questions aimed to challenge their understanding throughout the workshop. As shown in Figure 1, the workshop began with an initial discussion of course criteria in the light of the Higher Education Act and the Higher Education Ordinance, which can be described as overarching steering documents for all Swedish universities with the official expectations for general (generic skills) and programme specific (professional skills) outcomes of the university studies. The ambition was to

stimulate the students to interpret and negotiate the meaning of these documents in depth, with the goal of reaching a preliminary consensus of which criteria they found valuable to put in use when performing the peer reviews.

In the next stage, the students individually reviewed two example texts written to correspond with the instructions these students had received when writing their own reports. The texts were authored to resemble student essays. Both had strengths and weaknesses to give the students plenty of issues to debate.

Text one was authored in a purely referential style with a weak 'author's voice'. It was based on studies already conducted on the research subject but with no clear purpose as to why these were referred to. Text two was written in an argumentative style in which the 'author's voice' was present. It also referred to previous studies already conducted on the research subject but connected them to issues such as general trends in society. Some comparisons with studies made in other fields were also mentioned as a part of the chain of argumentation.

The students posted their individual reviews in the workshop and discussed similarities and differences in their reasoning. After this stage they had the option to modify the criteria they had chosen for their peer reviews to correspond with their new insights. Finally, the students applied these (possibly) new insights in reviewing a journal article which was part of the course material and had a final discussion about what they had learned from this, as a conclusion to the training in the workshop.

The students reviewed their peers' work in progress on three occasions. The first review was carried out on a draft for a literature or lecture comment, as writing these comments was part of their task to create their portfolio. The next review was on preliminary plans for their research study, and the last one was on the drafts for the final report of the results from their research studies.

Method

Data was collected from message boards in a 10-week distance course called Developmental Work, Leadership and Evaluation which was carried out spring 2008. The students, who were spread out over all parts of Sweden, gathered at the university on three occasions, at the start, in the middle and at the end of the course. Although they all had a teaching exam and were studying to further their qualifications, these previous study experiences varied in length and content, as their professions ranged from preschool teachers to college teachers and their ages varied from late twenties to fifty plus. Only three of the students were men.

The data used in this paper was collected from the two peer reviews at the end of the course, where the students reviewed each other's preliminary plans and the final drafts. We decided to use the categories Reinforcing, Suggestive, Corrective, and Didactic, inspired by the framework created by Chi (1996) as used by Tseng and Tsai (2007) to categorize the students' feedback to each other in this first approach in order to capture some of the nature of these comments. In our version these categories were used as follows:

Table 1: Categories of Analysis

	Description
Reinforcing	In different ways, reassuring that the product meets the requirements.
Suggestive	When it is pointed out that something is incomplete rather than incorrect, and includes suggestions for areas of improvement, thus alerting the recipient that there is a problem without telling them exactly what the problem is. Such feedback can be in the form of hints.
Corrective	If it is pointed out that something is completely wrong, e.g. the design of the report, the content, the usage of theory, references etc.
Didactic	A more lengthy explanation concerning errors or inadequate information provided. Lengthy explanations with a lecturing tone are adopted to direct the students to the right track.

The principle for the determination of coding units was that each time the topic changed, a new coding unit started. The authors of this paper calibrated their coding principles before and during the analysis, by discussing concrete samples from the data collected and how they should be categorised.

We used these categories as a means of getting an overview of the data and the feedback patterns. In addition to this pre-determined approach we also evaluated their comments in a more qualitative way, by paying attention to how the feedback was formulated and received. For example, if it opened up for discussion and reflection. We have also used some data from the workshop to shed light over the overall context in which the feedback was given and to understand more of the function of the feedback.

Findings

The analysis of the data collected from four study groups reveals interesting feedback patterns as we can see in Table 2.

Table 2: Feedback Patterns

Group	Type of feedback				
	Reinforcing	Suggestive	Corrective	Didactic	Total
1	78	66	5	1	150
2	18	27	2	2	49*
3	66	43	18	3	130
4	94	49	34	15	192
Total	256	185	59	21	448

*the number of comments is low because the students in this group lived in the same area and also met face to face to discuss the assignment.

As Table 2 shows, the students gave each other a lot of reinforcing feedback. Often this kind of feedback was given in a short, general way: "This also looks good." However, on many occasions they also gave more lengthy explanations to their peers, for example:

> *Good clarity and you have pointed out a few aspects which are important for good developmental work. You have connected to previous research in a relevant way and connected to your own research.*

Sometimes these types of reassuring comments seemed to fill a function to ease the stress some of the students felt about their ability to meet the requirements of the assessment task. Also, by discovering that their peers' approach resembled their own they appeared to gain self-assurance about their own ability.

The analyses also show that the students gave each other feedback of a more suggestive nature, for example:

> *The problem, as I see it, is that PBS (author note: problem based school development) could become rather large and hard to limit. If I were you I would find out what's already been done and focus on a problem in the school field that they are working with.*

There were some comments with a corrective tone. This type of comment ranged from, for example, pointing out misspellings or that a word used was improper to structural issues, to remarking that a description of method appeared in the findings section of the report. However, as shown in Table 2 this type of comment was relatively sparsely used.

It was clear that some students had more confidence than others in how to write a report in a fashion that would correlate to the explicit and implicit expectations of this kind of assessment product. Some of these students' feedback could clearly be classified as "didactic" in its nature. For example, one of them colour marked a

segment of a text to illustrate different weaknesses in it and explained in depth how this text could be improved.

Although this quantitative analysis gave us an overall picture of the peer review patterns, we have found that it did not fully capture all dimensions of the students' feedback and the processes that were triggered. One interesting observation was that on some occasions the students' comments were more reflective and formulated as a subject for discussion with the other students, rather than a single comment to one student. One example was when a student was insecure because she felt that they had contradictory instructions from tutors on how to describe the aim of their reports. When she raised this question she received a lot of responses which eventually led to consensus in the group.

Another interesting pattern was that since the students' read all comments, not just the ones aimed at their own report, they sometimes objected to someone else's statement and thereby started to discuss a certain issue. We also noticed that reading their peers' reports meant that they reflected on their own report. A reinforcing comment was often accompanied by a remark that reading this report had made the student aware of what she should revise in her own report.

The report assignment was designed to give the students' experience of their future task, to identify, evaluate and report on the effects of developmental work in schools from the perspective of the special needs education field. In some comments we could see that the feedback was not limited to the task itself, it also opened up discussions on how work with the report could become a tool in their future profession.

Conclusions

Firstly, although we did not specify the amount of feedback postings each student should present, we can conclude that the activity was overwhelming. Apparently the students found the assignment and peer review process inspiring.

Not very surprisingly the dominant feedback pattern was the 'reinforcing' type. This is, to our experience, a common finding on students commenting each others work. The great amount of this type of feedback could be due to social reasons, not wanting to hurt or upset their peer. Another reason could be that the students are insecure about their own ability and knowledge in these matters. It is also possible that the insights they gained from the criteria discussions and peer review preparation improved their initial work with the reports so that they fulfilled most of the requirements. This issue requires more attention in future research.

Tseng and Tsai found in their study that reinforcing and suggestive feedback seemed to support the quality of the students' work, while corrective and didactic feedback seemed to work in the opposite way. As could be seen in our study both corrective and didactic feedback is sparsely used, while the amount of suggestive feedback is almost as large as the reinforcing feedback. According to the findings of Tseng and Tsai the students' feedback patterns would indicate that they enhanced each other's performance. This was also indicated in the students' evaluation of the peer review element. Previous analysis of data from this course has shown that the students engaged intensively in the peer assessment activities and that they found this element valuable for their learning (Liljeström, 2008, in press; Liljeström, Hult & Stödberg, 2008). Teachers on the course also reported that participating in the workshop activity seemed to have supported especially those students who had failed to pass one or more course exams previously in the programme.

One of the risks that has been pointed out with formative and criteria based assessment is that it could trigger students' reductionist learning focussing only on fulfilling limited criteria and details, e.g. formalities like flaws in the references. However, the results from this study indicate that participation in the workshops and peer review process did not produce many comments with this approach. As the results have shown, the peer review element seems to have stimulated more than just a simple check that the reports fulfilled explicit criteria. This is demonstrated by the richness of the discussions both with regard to issues that had to do with carrying out research and reporting its results and to how they could put these insights to use when approaching similar tasks in their future profession. This could be an indication of sustainable learning in Boud's (2002) sense.

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