

Enhancing Soft Skills through Peer Review Activity in a Technical Writing Class

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Abstract—Peer review is an activity where students review their classmates' writing and then evaluate the content, development, unity and organization. Studies have shown that peer review activities benefit both the reviewer and the writer in developing their reading and writing skills. Furthermore, peer review activities may also enhance students' soft skills. This study was conducted to find out the benefits of peer review activity in a technical writing class based on engineering students' perceptions. The study also highlights how these benefits could improve the students' soft skills. A set of questionnaire was given to 200 undergraduate students of a technical writing course. The results of the study indicate that the activity could help improve their critical thinking skills, written and oral communication skills, as well as team work. This paper further discusses how the implications of these benefits could help enhance students' soft skills.

Keywords—Peer review, soft skills, technical writing.

I. INTRODUCTION

PEER review is one of the techniques used in writing classes that allows students to see interrelation of reading tasks and writing activities. It can be seen as a powerful learning tool incorporating reading and writing practice. According to Levine et al., [1], this activity offers an opportunity for the students to discuss and develop ideas about the content of their writing as well as to help each other in improving their writing skills. A study done by Mittan[2] indicates that peer reviews enhance students' motivation and confidence to write and improve their writing skills. Gilliam [3] emphasizes peer reviews benefit both the reviewer and the writer in developing thinking skills as well as exercising 'different order of reading skills' whilst Levine et al., [1] reveal that peer review activity can make the reviewer a more critical thinker. Indeed, in examining students' opinions on peer reviews, Mangelsdorf[4] found that her students claimed that the content and the organization of their writing improved after peer review activities. The students reckoned that they managed to develop ideas clearly through considering other ideas that are relevant to their topics. Most of the abovementioned studies were done for general composition

classes, yet little has been mentioned about the effectiveness and usefulness of peer reviews in technical writing classes.

Soft skills are skills related to personal attributes, interpersonal skills, and problem solving and decision making skills [5]. They are basically skills in dealing with people. Since peer review is an activity which involves the interaction between the writer and the reader, either orally or written, it requires the application of soft skills to make the activity effective. According to Bancino and Zevalkink, [6], historically, soft skills have been less important in technical discipline. Nevertheless, in today's fast-paced globalized era, they are more important than ever. This is because the increasing global competition and the changing nature of most technical jobs have made soft skills more important to be possessed.

In writing a technical document, the writer's goal is to help the readers understand the message in the document. Therefore, a technical writer must know the needs and expectations of the readers and fulfill them. In a peer review activity, the reviewers act as readers and know the requirements of the assignment. The readers would see whether the writers have fulfilled the needs of the assignment. Nystrand [7] notes that the writers "write on the premises of the readers, taking the readers' expectations into account, and shaping their texts to meet such expectations of the audience." (p. 46).

Based on this premise, this paper intends to assess the perception of students in a technical writing class at a private university on peer reviews. The findings of the study would give some preliminary insights of the benefits gained by student writers as well as student readers. These benefits are then be mapped against the relevant soft skills elements which indicate the soft skills that are developed through the peer review activity. Such mapping would assist educators to relate how incorporating peer review can enhance the development of students' soft skills.

II. METHODOLOGY

The respondents consist of engineering and technology students in their second year of study. During the time this study was carried out the technical writing course was compulsory for them to take as part of the university requirement. The course was divided in two sections. During the first seven weeks of the semester, the students were taught the basics and techniques of technical writing. In the next section, the remaining eight weeks, the students were taught the technical writing applications where they started writing formal and informal reports, proposals and job application materials such as cover letter and curriculum vitae.

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In this writing class the students were introduced to the peer review activity in this second half of the semester. They were given writing exercises in class and worked on an exercise in small groups of 3 to 4 students. Thus, peer review activity requires them to work in a team. They were given forty-five minutes to one hour to work on the writing exercise and were required to submit their work at the end of class session. In the next class meeting, the students were given their friend's work and a peer review form for peer reviewing activity. Before they started the activity, the lecturer discussed with the class the elements of a good paper. Therefore, when they read their friends' work, they would be looking for these elements. The students carried out the peer review activity for 4 to 5 times throughout the eight weeks.

The data for this study were gathered from several sources to allow for triangulation. A set of questionnaire was developed and contributed to 200 engineering and technology students. This questionnaire intended to access the students' perceptions towards the peer review activity. Twenty (20) of these students were then interviewed at the end of the semester to help validate the responses of students to the questionnaire, and to help understand their feelings about the peer review activity, which cannot be captured by a questionnaire. As depicted by Cohen et al. [8], the purpose of interview is to validate other methods and also to go deeper into the reasons of why the respondents responded as they did.

The data were collected from the questionnaire comprise of the responses to each question with the fixed alternatives and the open-ended comments. For the open-ended question, the students were asked to write their responses to the question "What have you learnt from this activity?". The results represent the total number of Technical Writing students for one semester.

III. RESULTS

The study shows that majority of the students believe that peer review activity is beneficial to them as it does help in improving their writing to a certain extent. Of the total comments, four perceived benefits gained from the peer review activity are better understanding of the assignment, learning from own mistakes, learning from others' work, and enhancing their analytical and critical thinking. Table I below summarizes the finding:

TABLE I
BENEFITS OF PEER REVIEW

Benefit	Percentage
Better understanding of assignments	62
Learn from own mistakes	45
Learn from others' work	35
Enhancing analytical and critical thinking	26

About 62 percent of the respondents believe that peer review activity helps them to better understand the requirements of the given assignment. In other words, from the activity students not only see how they can improve their writing ability, but they could also see how they can improve

the content of the writing. In the interview, some of the students indicate the following:

- *"When we read our friend's work, we do not only help improve their work but we can learn something from it, like the right way to do the assignment"*,
- *"We can know how actually the lecturer mark our work, what she looks for in our work"*.
- *"...we help each other and we give good suggestions"*.

This shows that students have discovered that they could understand the requirement of the writing assignment through the peer review exercise, thus showing the ability to expand their thinking skills by analyzing the exercise beyond the usual scope.

Some 26 percent of the students have indicated their realization that this activity has enhanced their critical thinking skills. Even though in the interview the students did not specifically indicate the words 'analytical and critical thinking', through their conversation like from peer review activity they could figure out how the lecturer evaluate their works, and also by looking at the positive and negative aspects of the work of their friends they could think beyond the scope about how they could improve their own work.

Other benefits that have been highlighted by the respondents are that they managed to learn from their own mistakes and from others' work. This is achieved through reading the suggestions given by the peer reviewer, reading their peer's piece of writing and analyzing the style and content of the writing. This is evident through the responses of some respondents that were interviewed as follows:

- *"... we can compare our work with the other work and if there's something wrong with the work, we can correct them and sometimes we can improve ourselves"*.
- *"I write long comments and try to help my friends to improve because this can also help me improve"*.
- *"We get to look at other people's work, so when we do our work we will not do the same mistake..."*
- *"I think it is fun because we can give comment on the work of others and we can also know what others comment about our work"*.

IV. DISCUSSION

In general, the findings have highlighted some benefits of peer review to the students. The findings suggest that the peer reviews could help students to improve their soft skills, namely analytical and critical thinking skills, written and oral communication skills, and also team work.

A) Analytical and Critical Thinking Skills

The Ministry of Higher Education Malaysia [9] describes the soft skills as the ability to think in a critical, creative, innovative and analytical manner which includes the ability to apply knowledge and the ability to find ideas and look for alternative solutions. From our findings, two of the perceived benefits gained from peer review activity are learning or improving from own mistakes and learning from others' work. This indicates that the students were practicing critical reading which, according to Fitzgerald [10], refers to "the criticism of one's own thinking and the writer's thinking during meaning construction when reading. As individuals read, they compare the actual text to their goals, beliefs and expectations for the text, and they consider their own goals and the text in relation to what they think the writers' goals are" (p. 44). For the respondents, they thoughtfully read the writing and analyzed the content, development, unity and clarity through peer review activity as if they are the "writer(s) composing the text" [3, p. 98].

As mentioned earlier, the writer should write according to the needs and expectations of the readers. The process of writing to cater the needs of a specific audience involves critical reading and revision skills. In technical writing, the students should use these skills to write effective technical documents. The ideal way to meet the readers' expectations is allowing the writing be read by the authentic technical readers who are hardly available in a formal learning environment. Thus, peer review activity provides the alternative means of meeting technical readers' expectations as supported by Mittan [4] who believes that peer reviews provide students with an authentic audience and able students to receive different views on their writing.

In this activity, the students who reviewed the writing acted as the technical readers. The readers put their thoughts in writing on the peer review worksheet to help them be conscious of these thoughts. Such critical thoughts were intended to help the writers improve their writing. This idea is further supported by Gousseva [11] who notes that, "it is important to raise the students' awareness of writing as a skill integral to the process of becoming a critical thinker in order to make the writing – revising process effective" (p.5). In other words, the skills used by good readers can be transferred to their writing. Thus, peer review activity is a good exercise for the students to develop and improve their own critical reading skills. This is good for these students since they are engineering and technical students who are required to do a lot of critical thinking in their field of studies as they are essential skills for engineering students to become good engineers later as well as making them more globally oriented [12]. This activity also proves to them that improving their critical thinking skills is not only done in engineering and technical courses but also in language classes.

B. Written and Oral Communication Skills

One of the important elements in soft skills is communication skill which is described as the ability to deliver ideas clearly, effectively and with confidence either orally or in writing. Communication skills are amongst the most sought after skills by many employers [13], [14], [15]. In the accreditation guidelines put forth by the Board of

Engineers, Malaysia (BEM), which monitors engineering curriculum in Malaysia, the ability to communicate effectively is considered one of the attributes required for engineering graduates [16]. Thus, Hairuzila et al. [17] emphasize that graduates with good communication ability are better prepared to enter the workplace in today's highly competitive job market.

In general, the students are in favor of the peer review activity as they find it useful to them in terms of helping them improve their writing skills. In writing they continuously re-read what has been written before to re-organize and re-focus their thoughts. They read what was written by others to shape the direction of their own thoughts, to find confirmations of their own ideas in the writing of others, and to extend their thinking. While they were completing the peer review in which they evaluated their friends' writing, they read the written text and recognized its strengths and weaknesses. Such ability indicates that they have improved their reading skills and at the same time learn from others' work.

This illustrates that besides helping the students improve their writing skills, peer review activity can also help the students improve their reading skills indirectly. Writing and reading are closely linked and interdependent, neither can develop in isolation from the other nor can one develop before the other. Indeed, DeFord [18] notes, "the desire to write provides an incentive and direction for reading, and reading also acts as an incentive for writing" (p.79). In the technical writing class, the lecturer emphasizes many times to the students that they write for the audience. Writers have to communicate their ideas clearly to the readers in order to get the message across. Thus, in this activity they act as readers rather than writers and try to evaluate the work of their peers. Indirectly, they would know how the reader would analyze a piece of writing and comment on it. This act requires good reading skills. If they do this activity frequently, they would be able to improve their reading skills and writing skills.

Besides improving written communication skills, peer review activity also requires students to interact with others especially between the reviewer and the writer. The reviewers have to know the right way to communicate in order to criticize their peers' work. The writer must also know how to react professionally when their work is being criticized. Good communication skills from both parties are vital in order not to offend each other and to be able to carry out the activity successfully.

C. Teamwork

As indicated earlier, the students definitely gained better understanding of the assignment through teamwork. Teamwork refers to the ability to build a good rapport, interact and work effectively with others and also the ability to recognize and respect the attitude, behavior and beliefs of others [9].

Throughout each peer review activity students worked as a team by taking the roles as readers and writers alternately. As readers, the students read their friends' work, and reviewed the content, development, unity and organization with their own expectations in mind. They gave comments on these four areas and as they read, they had to discipline their thoughts to concentrate on the elements of a good piece of technical and

professional writing learnt. If the piece of writing they read is comprehensible to them, it is deemed to be an effective writing as the writers have included enough information and details [19]. The readers at the same time were able to learn from others' work as they encountered good pieces of technical document.

Meanwhile, as writers, the students read the feedback or comments and through this process, they were reminded of the elements of effective technical and professional writing learnt in classes. They were informed about the technical readers' expectations as the readers gave them feedback on their written work. The writers then eventually met such expectations through either incorporating the suggestions or revising their pieces of writing.

While participating in several peer review sessions, the students have definitely kept switching their stance accordingly. Throughout this process, the elements of good technical writing as well as the use of language appropriate for such writing has been continuously reinforced and eventually promoted better understanding for both the writer and the reader. This indicates that peer review is a team effort.

V. CONCLUSION

In conclusion, the peer review activity is perceived as an effective method to help students of a technical writing course to be better writers and critical readers. It gives an opportunity for students to enhance their soft skills such as thinking and communication skills, and teamwork. Besides learning the elements of technical writings, peer review activity allow students to read, respond and reflect what they read to their existing knowledge. In the process of improving a given piece of writing, students were prompted to think analytically and critically of what they read and communicate their opinions to peers. Since the activity is done in groups of 4 or 5, students are likely to work together for mutual benefits. In short, peer review activity can be conveniently incorporated in education to propel the development of the mapped soft skills. Future research should investigate how peer review can benefit and be incorporated in the teaching and learning of other subjects.

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