

## PEER ASSESSMENT AS ACTIVE LEARNING METHOD

Tatjana von Rosen

Department of Statistics, Stockholm University, Stockholm, Sweden

[Tatjana.vonRosen@stat.su.se](mailto:Tatjana.vonRosen@stat.su.se)

*The importance of feedback in the student learning process is well understood among educational researchers (theorists) and teachers (practitioners). Its positive effects on the students learning and achievements have extensively been discussed in the theoretical research and illustrated by many empirical studies. It is also recognized that student assessment of other students' work is a useful tool for activating student engagement in the learning process. This work presents the results of a pilot study investigating the attitudes toward peer-assessment of examination papers and exploring experiences of the peer-assessment process of students pursuing a bachelor degree in statistics.*

### BACKGROUND

Examinations are usually used at the end of a study period, for example a module or a program. It is generally accepted that assessment is an unavoidable component of the teaching process because of its influence on learning. Feedback that follows examination is summative and focuses on telling students how they have performed. Constructive feedback is a good motivation for students to revise their performance and current knowledge in order to improve their learning.

In this work we focus on the course "Degree project" (Department of Statistics, Stockholm University) which comprises two modules: *Module 1*, Bachelor's essay (BE); and *Module 2*, Discussion, i.e. peer assessment of BE.

The expected learning outcomes of the course are the following. Having successfully completed the course, students will be able with a high grade of independence: (i) to formulate, analyze and adequately solve a statistical problem; (ii) to document a scientific work in a report; (iii) to review statistical reports and scientific studies critically; (iv) to orally present and discuss statistical reports.

During this course students acquire skills on planning, organizing and conducting a project in some statistical area. There are many facets of the course that are vital for any applied or theoretical project, for example, students will have to find ways to apply or devise statistical methods in a field that is unfamiliar to them (e.g. criminology, climate research). Students will also practice to find relevant literature and write a scientific report. At the final seminar students will orally discuss other students' BE, and defend their own work.

The main part of the course is the writing of a BE on a topic in applied or theoretical statistics. The work on the BE starts at the beginning of the autumn semester and is to be completed at the end of the same semester. Today, two students write jointly their BE under supervision of a teacher. Students may suggest a topic for their BE, or the topic may be given by the supervisor.

Another compulsory part of the course is peer-assessment of a BE. Having successfully completed *Module 2* students will be able to critically assess and discuss statistical reports and scientific studies. *Module 2* is graded as either pass or fail. To pass *Module 2* a student should satisfactorily discuss some other student's BE. In peer assessment, a student should be able, in particular, to assess arguments for the choice of statistical methods used in BE and critically review the obtained results and conclusions. The guidelines for peer assessment are given to the students at the beginning of the course. *Module 2* comprises a 25 min oral presentation at the final seminar during which the peers should communicate their constructive critique to the authors of the BE (and the audience), and written report with comments to be submitted to the examiner and the author(s) before the final seminar. Students work on their peer assessment during a week.

Today, peer assessment is often a single-mission activity at the end of the Bachelor's programme, and its effect on student learning is impossible to evaluate. This is why in this study we will focus on investigation of students' attitude towards peer assessment and experiences of the peer-assessment process.

## PEER ASSESSMENT OF BACHELOR ESSAYS

Students' active involvement in the assessment is an essential part of their learning which is of utmost importance not only for a particular course but also for the whole educational process. Peer assessment stimulates an active engagement of students in their learning, requires students to take responsibility for their actions, enables collaborative learning and hence, contributes to enhancement of the student learning. Students can learn a lot about a task by applying assessment criteria themselves. However, it is obvious that students need experience in peer assessment in order to understand and be able to use the following concepts (Sadler, 2010): task compliance (conformity between the task expected by the task specification and the response actually obtained from a student), quality ("the degree to which a work comes together as a whole to achieve its intended purpose"), and criteria (understanding the meaning of criteria mean and how to apply them correctly).

Nowadays, many subjects are quite dynamic in their development (e.g. statistics). One of the important issues concerning learning, and hence teaching, in my opinion is a positive teaching and learning environment. Such a positive environment yields a positive attitude to the subject which in its turn should stimulate student learning. However, peer assessment can be met with negative attitude from students caused by low personal and professional confidence (Sher, 2001).

The overall purpose of the present study is to examine students' attitude towards the peer assessment of BE. Specific aims are to investigate (i) whether the students perceive their peer assessment of other students' BE as a helpful tool for improvement their own learning, (ii) how seriously the students take on the task of peer assessment in order to give a good feedback, (iii) if the students perceive the feedback from other students as an opportunity to enhance their own learning, (iv) if the students consider feedback from the teacher (examiner, supervisor) regarding their own BE as the ultimate guide necessary to improve their learning, (v) if the students see a need for practicing the peer assessment in several courses during the Bachelor's programme.

To answer the above questions, a survey has been conducted where questionnaires have been distributed to master students in Statistics who have obtained bachelor degree from the Department of Statistics. Hence, all students have already presented their BE, and they have some experience in the peer assessment of other students BE. Moreover, a few face-to-face interviews have been conducted in order to get the picture of students' attitude towards *Module 2* in general, and to find out possible ways to improve the course and students learning.

Despite of small sample size ( $n=10$ ), the experience from this pilot study to work with the feedback from students can, in future, yield more successful achievement of the expected learning outcomes of this specific course, and hence, the enhanced quality of BE.

## RESULTS

The results of the conducted pilot survey elucidate students' perception of the peer assessment and feedback, in general, and their attitude towards the course (Degree Project), in particular. The obtained results can be summarized in the following way.

Around 60% of the respondents found peer assessment to be worthwhile (rewarding) regarding their own learning. Almost 70% of the respondents could think about working on the received feedback from their peers in order to improve their own BE if there were enough time for it. The lack of time was identified to be a hindrance for deeper understanding the other students' BE topic for 50% of the respondents. Only 40% of the respondents found it difficult to go deeper into other students' topic of the BE because of lack of knowledge. The majority of the respondents (80%) would like to get more experience (practice) in peer assessment during the Bachelor's programme. Only 40% of the respondents would like to get feedback regarding their written peer assessment before the final seminar. The majority of respondents (60%) would not like to get feedback (be assessed) from the teacher from the department (other than examiner or supervisor). Almost all respondents (90%) had positive attitudes towards the oral part of *Module 2*. Almost 60% of the respondents would change their attitudes towards peer assessment if the grading scale have been changed from (Pass, Fail) to (A,...,F).

In general, the information concerning the providing feedback and peer assessment was found to be satisfactory (50%). Almost 50% of the respondents spent ten or more hours working with their peer assessment. The majority of the respondents (70%) had negative experience of the

final seminar. The interviews showed that certain critique was directed to the lack of information concerning the structure of the final seminar and the processes of giving and receiving feedback during the oral discussion, and non-serious attitudes of peers towards the communication of feedback to the authors of BE. Finally, the respondents perceived peer assessment positively as a tool to improve academic writing and to work on critical thinking.

## DISCUSSION

Peer assessment as an active learning method has become a research topic of great interest. This method is believed to be an efficient tool for developing students' critical thinking and self-regulating learning skills (Lewcowicz & Moon, 1985; Cheng & Warren, 2005) that are of high value in the modern society.

Research studies involving peer assessment have indicated that in order to enable students to perform these tasks effectively, they need training and experience (Adams & King, 1995; Freeman, 1995; Pond et al., 1995). Moreover, it should be explained to students how to provide peer feedback and the assessment criteria should be clearly formulated and be based on learning outcomes (Salmon, 2000). We can agree with Lewcowicz and Moon (1985) that during the process of peer assessment, students might increase their awareness of the criteria by which themselves are assessed. Hence, the peer assessment may help them in developing skills related to the self-regulating learning.

The goal of the present pilot study was to examine students' attitude towards the peer assessment of BE in the final course at the Department of Statistics, Stockholm University. The obtained results of this study in general agree with the theoretical research and other empirical studies in this field. For example, the majority of respondents perceive their peer assessment of other students' BE as a helpful tool to improve their own learning which is in line with findings from other empirical studies (Jacobs et al., 1998; Tsui & Ng, 2000).

Working with assessment criteria which is provided at the beginning of the course makes it possible for students to reflect on their own knowledge and skills. Moreover, majority of respondents considered the feedback obtained from other students as an opportunity to enhance the quality of their own BE, although the summative character of the peer assessment and time constraints were considered to be a hindrance.

We also found that students' attitudes toward peer assessment were positive, similarly to findings of Haaga (1993), Strachan and Wilcox (1996). Despite the positive attitude to the peer assessment in general, the majority of respondents would take on the task of peer assessment more seriously if the quality of their peer assessment will influence their final grade in this course (not just pass or fail). Quite surprising are the obtained result concerning non-willingness of respondents to be assessed by the teacher from the department other than examiner or supervisor. Although, in some studies it has been found that students prefer teacher feedback because they perceive peers to be less competent (Leki, 1991; Lockhart & Ng 1993; Zhang, 1995). This disagreement might be explained by students' fear to get hard critique and difficult questions concerning their BE, possibly fear not to understand critique and questions, and failure of the examiner to create a positive working environment at the final seminar.

Majority of the respondents emphasized the need to practice peer assessment during the whole Bachelor's programme. The positive effect of training to provide feedback has been found by Cheng and Warren (1997), Sluijsmans et al. (2004) and van Zundert et al. (2010). Some respondents would like to get formative feedback from their peers in order to improve their BE and refine their learning by filling in gaps in their knowledge while writing BE.

Summarizing, we can say that through meaningful engagement of students in the learning process, for example via peer assessment, students' motivation and responsibility for their learning can be positively affected. Peer assessment can successfully influence students to improve their skills in presentations of their work (in oral and written form) and help them to become self-regulated learners. Practicing peer assessment during the Bachelor's programme can stimulate and enhance collaborative learning, gradually help students to develop a better feeling of quality concept (tacit knowledge).

It should be kept in mind that peer assessment is not a panacea. Despite generally accepted positive effects, there are certain limitations connected with peer assessment. For example, peers

may feel uncomfortable in assessing their coursemates (Levine et al., 2007), some students may doubt the reliability of their own and peers' skill to peer assess (Hanrahan & Isaacs, 2001; van Gennip et al., 2010). The present pilot study can be considered as a starting point for designing and conducting a large scale empirical study concerning the use of peer assessment in the course "Degree Project" in order to elucidate its beneficial effects for student learning.

#### REFERENCES

- Adams, C., & King, K. (1995). Towards a framework for student self assessment. *Innovation in Education and Training International*, 32, 336-343.
- Cheng, W., & Warren, M. (2000). Making a difference: using peers to assess individual students' contributions to a group project. *Teaching in Higher Education*, 5, 243-255.
- Cheng, W., & Warren, M. (2005). Peer assessment of language proficiency. *Language Testing*, 22, 93-121.
- Freeman, M. (1995). Peer assessment by groups of group work. *Assessment and Evaluation in Higher Education*, 20, 289-99.
- Haaga, D.A.F. (1993). Peer review of term papers in graduate psychology courses. *Teaching of Psychology*, 20, 28-32.
- Hanrahan, J., & Isaacs, G. (2001). Assessing self- and peer assessment: The students' views. *Higher Education Research and Development*, 20, 53-70.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77, 81-112.
- Jacobs, G.M., Curtis, A., Braine, G., & Huang, S.Y. (1998). Feedback on student writing: Taking the middle path. *Journal of Second Language Writing*, 7, 307-317.
- Leki, I. (1991). The preferences of ESL students for error correction in college-level-writing classes. *Foreign Language Annals*, 24, 203-218.
- Levine, R.E., Kelly, P.A., Karakoc, T. & Haidet, P. (2007). Peer evaluation in a clinical clerkship: Students' attitudes, experiences, and correlations with traditional assessments. *Academic Psychiatry*, 31, 19-24.
- Lewcowicz, J. & Moon, J. (1985). Evaluation: a way of involving the learner. In Alderson, J.C. (ed.) *Evaluation. Practical Papers in English Language Education*, 6 (pp. 45-80). Oxford: Pergamon Press.
- Pond, K., Ul-Haq, R. & Wade, W. (1995). Peer review: a precursor to peer assessment. *Innovation in Education and Training International*, 32, 314-23.
- Sadler, D.R. (2010). Beyond feedback: Developing student capability in complex appraisal. *Assessment and Evaluation in Higher Education*, 35, 535-550.
- Salmon, G. (2000). *E-moderating: The key to teaching and learning online*. London: Kogan Page.
- Sher, W. (2001). Peer Assessment in the Design & Construction of a Reinforced Concrete Lintel. From Assessment Case Studies in the Centre for Education in the Built Environment website. Loughborough University. (Accessed: 21 May 2013).
- Strachan, I.B. & Wilcox, S. (1996). Peer and self assessment of group work: Developing an effective response to increased enrolment in a third-year course in microclimatology. *Journal of Geography in Higher Education*, 20, 343-353.
- Tsui, A.B.M. & Ng, M. (2000). Do secondary L2 writers benefit from peer comments? *Journal of Second Language Learning*, 9, 147-170.
- Van Gennip, N.A.E., Segers, M.S.R. & Tillema, H.H. (2009). Peer assessment for learning from a social perspective: The influence of interpersonal variables and structural features. *Educational Research Review*, 4, 41-51.