A generic student peer assessment concept

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Kompetanse – mer enn summen av kunnskaper og ferdigheter

At a glance

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Foreword

The Nordic Journal of STEM Education is proud to present the proceedings from the MNT Conference 2025. The theme for this year's conference was "Competence – more than the sum of knowledge and skills. How should we design educational pathways with a focus on competence?" These proceedings include 60 contributions on education, teaching, and learning in STEM from authors representing 19 different institutions from across Norway and abroad. Contributions - and their associated extended abstracts published in these proceedings - were in either English or a Norwegian language. And we enjoyed hearing about a diversity of teaching-related topics from across the STEM fields, from presenters ranging in experience from bachelor-level students to PhDs, Professors and unit leaders. As both the Conference and our journal are supported by UHR-MNT, we have an obvious connection and a shared mission to better understand, and improve, STEM teaching in Norway and across the Nordics. We are making progress!

We look forward to seeing many of these conference abstracts developed into full articles for submission—in NJSTEME or elsewhere.

Sehoya Cotner, Oddfrid Førland, and the team at NJSTEME

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Innholdsfortegnelse

Workshop

A Generic Student Peer Assessment Concept

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Abstract: This session offers the participants a concrete experience in how they in a controlled way can perform peer review of written exam moments. The goal is that all participants will receive a fully working peer review concept that they will be able to use in their own teaching, both for small and large student groups.

Session outline:

1. We start with a short introductory discussion around experiences and results.
2. The participants actively do a full peer review example.
3. We collect the participants' experiences and end the session with a concluding discussion on these experiences and what the literature says about peer review.

Keyword:
Peer assessment, learning, feedback

1 Introduction

Student peer assessment is a process whereby students assess (i.e. grade) each other's work based on a teacher's criteria. The practice is an accepted way to increase the feedback to the students without resulting in a disproportionate teacher workload. It is also employed to make the students take a larger responsibility of their learning process and to make the assessment process more transparent (Bloxham and West 2004, Dochy et al 1999, Orsmond et al 1996, Smith et al 2002). As a bonus, the practice can provide immediate feedback which benefits i.e. Gibbs and Simpson (2003) describes: *"Imperfect feedback from a fellow student provided almost immediately may have much more impact than more perfect feedback from a tutor four weeks later."*

2 Session outline

The intended audience is any teaching personnel, and our goal is that all participants will receive a fully working student peer review concept that they will be able to use in their own teaching. The session will be very interactive where the participants i.e. will go through a full peer assessment circle. It will be a combined format of discussion, tutorial and workshop!

The general structure will be as follows:

1. A short introductory presentation on what the literature says about peer assessment between students and on our own experiences and results.
2. The participants actively perform a full peer assessment example (first individually, then in pairs).
3. The participants' experiences are collected and discussed in relation to what the literature says about peer assessment.

3 Our model of student peer assessment

3.1 Background

A serious problem in many courses is that some students do not work with the course material continuously during the course. Instead, they try to compensate and do all the reading the last week before the final exam. This approach seldom works...

Another problem with not working with the course material continuously is that the course is perceived as harder and harder since the students haven't gained enough knowledge to accomplish tasks on new material (i.e. labs and assignments). These students are simple out of phase with the intended course tempo and don't reflect on the material learnt so far. They simply see the new assignment as an isolated problem and are just interested in passing the assignment instead of the intended idea of using previous knowledge to build on.

To overcome these problems, we have used (among other things) student peer assessed milestone tests (small written quarter term exams) after each course section. Our aim is to get the student to work with the course material continuously from the very

start. It will also let them work and reflect thoroughly on each topic before moving on to next topic. On top of this it also provides the teachers with a formative assessment of what the students really know and makes it possible for the teachers to adapt and adjust the course.

3.2 Reliability

There are many studies where student peer assessment has been used as a tool to assess performance or to grade. These studies have done a comparison between the students' assessments and the teachers' assessment of the same tasks. Most of the studies (including our own studies) show a high correlation between the students' and the teachers' points/grades (Bloxham and West 2004, Orsmond et al 2002, Stefani 1994), but there are exceptions as well (Kwan and Leung 1996, Orsmond et al 1996).

Dochy et al (1999) concludes that student peer assessment should not be used for grading unless combined with self-assessment or co-assessment. The latter may include that the peer assessment only is a part of the final grade or that the teacher may overrule the peer assessment grade.

3.3 The four parts

Our model consists of four distinguished parts according to the following subsections (3.3.1–4) (Axelsson 2005, Kihl et al 2007).

3.3.1 Part 1: The writing part

In this part the students take (write) an individual test. It is important this part is individual to really force the students to confront their own knowledge.

3.3.2 Part 2: The assessment part

In this part the students correct and grade each other's tests in pairs with the help of a correction template provided by the teachers. Each pair grades two other tests. This is the main learning activity in the whole process since they do it in pairs and discuss how to interpret the template and how to grade the test. But also because they reflect over their own test in relation to both the template and to the tests they are grading.

3.3.3 Part 3: The feedback part

In this part the students get to see their own graded test. Each student is given the opportunity to check their grading and if a student disagrees with the graders, he or she can ask the teachers to look at the grading. This is an important from a fairness point of view.

3.3.4 Part 4: The post work part

This part is not always necessary but is normally a good thing to include from a reliability perspective. It can include re-grading for those who wants it (see part 3) or a teacher control of a predetermined portion of the tests (i.e. 10%). Just by stating to the students there will be a random control on their grading has improved the grading quality. It is also an opportunity for the teacher to get feedback on the students' progression.

3.4 Discussion

We have a very positive experience of using student peer assessment and they are often mentioned in positive words in student evaluations.

To assign the correction and grading of our milestone tests to the students works very well. Though, it is important to clarify that the milestone tests are mainly learning activities and not exam activities. The peer assessment part is a key part in this and that it can be used to provide bonus points towards the final grade is mainly a positive side effect.

The peer assessment part works as a formative assessment and gives feedback to both all individual students and to the teachers on an early stage of the course. The student gets aware of her knowledge level in time to react and the teacher gets the possibility to adapt the teaching and address difficulties and misconceptions.

Since the students during the peer assessment process get the opportunity to see different solutions of the same problem, the students get trained in analyzing and evaluating solutions. The students also get acquainted with the grading criteria for the course. In other similar experiment where student peer assessment have been used the quality of the students' performance have increased (Dochy et al 1999, Rust et al 2003).

References

Axelsson, A. 2005. Kan man lita på kamratgranskning? [Can you trust peer assement?]. In *Proceedings of 3:e Pedagogiska inspirationskonferensen* (Lund, Sweden, May 31, 2005). Lund University, Faculty of Engineering, 57-59.

Bloxham, S. and West, A. 2004. Understanding the rules of the game: marking peer assessment as a medium for developing students' conceptions of assessment. *Assessment & Evaluation in Higher Education*. 29, 6 (2004), 721-733.

Dochy, F., Segers, M., and Sluijsmans, D. 1999. The use of self-, peer and co-assessment: a review, *Studies in Higher Education*. 24, 3 (1999), 331-351.

Gibbs, G. and Simpson, C. 2003. Does your assessment support your students' learning?. *Journal of Teaching and Learning in Higher Education*. 1, 1 (2003).

Kihl, M., Andersson, R., and Axelsson, A. 2007. Kamratgranskning i stora klasser [Peer assessment in large classes]. In *Proceedings of Utvecklingskonferens LU* (Lund, Sweden, September 27, 2007). Lund University, 83-90.

Kwan, K. and Leung, R. 1996. Tutor versus peer group assessment of student performance in a simulation training exercise. *Assessment & Evaluation in Higher Education*. 21, 3 (1996), 205-214.

Orsmond, P., Merry, S., and Reiling, K. 1996. The importance of marking criteria in the use of peer assessment. *Assessment & Evaluation in Higher Education*. 21, 3 (1996), 239-251.

Orsmond, P., Merry, S., and Reiling, K. 2002. The use of exemplars and formative feedback when using student derived marking criteria in peer and self-assessment. *Assessment & Evaluation in Higher Education.* 27, 4 (2002), 309-323.

Rust, C., Price, M., and O'Donovan, B. 2003. Improving students ´ learning by developing their understanding of assessment criteria and process, *Assessment & Evaluation in Higher Education*, 28, 2 (2003), 147-164.

Smith, H., Cooper A., and Lancaster, L. 2002. Improving the quality of undergraduate peer assessment: A case for student and staff development. *Innovations in Education and Teaching International*. 39, 1 (2002), 71-81.

Stefani, L. A. J. 1994. Peer, self and tutor assessment relative reliabilities. *Studies in Higher Education*. 19, 1 (1994), 69-75.