Linköping University Post Print

Examination involving students as peer examiners

Anders Ljungman and Charlotte Silén

N.B.: When citing this work, cite the original article.

Examination involving students as peer examiners

Anders G Ljungman 1), Charlotte Silén 2)

1) Assistant Professor. Division of Occupational and Environmental Medicine, Department of Molecular and Clinical Medicine. **Faculty of Health Sciences, Linköping University.** Research field: Environmentally related airway disease. Teacher in the Medical biology- and Medical programme.

2) Assistant Professor in Higher Education. Head of the Division for Learning and Teaching Research in Medicine and Care. Department of Medicine and Care, **Faculty of Health Sciences, Linköping University.** Research field: PBL and student centred learning in relation to student responsibility, self-directed learning, assessment and tutorial processes.

Corresponding author:
Charlotte Silén
Centre for Educational Development and Research, Faculty of Health Sciences
Linköping University
581 83 Linköping
Sweden
e-mail: chasi@imv.liu.se

Abstract
The main interest in this article is the students' involvement in assessment as a part of growth towards self-directedness in learning. In order to enhance students' development of autonomy in learning, a project involving "older" students as peer examiners for "younger" students was designed and carried out. Students in the 6th semester in a PBL-based Masters program of Medical biology participated, together with faculty, as examiners of 5th semester students. The examination and the assessment situation was carefully designed based on learning theories, empirical evidence and experiences underpinning student-centred learning, especially in the form of PBL used at the faculty.

The project was evaluated and analysed in order to understand students' learning processes related to the responsibility of assessing peers. The situation of the peer examiners was interpreted based on their own experiences with statements from the students assessed and faculty involved in the assessment. Evaluations from six occasions, spring and fall, 2003 – 2005, were included in the study. The findings suggest that involving students in assessment as equal partners with faculty makes it is possible for students to apprehend metacognitive competencies needed to be responsible and autonomous in learning. The peer examiners experience motivation to learn about learning, they acquire tacit knowledge about assessment and they learn through being involved and trusted. The student-centred educational context, which requires responsibility throughout the program, is recognised as very important.

Introduction

This article focuses on peer assessment as a means for the students to become autonomous, that is to say, to increase their independence and ability to take responsibility for their own learning during education and as reflective professionals in the future. An important part of this is the ability to assess oneself and others (cf. Brown et al 1997; Boud et al, 1995, 2001; Falchicov, 2004).

It is well known from research that assessment has a very important influence on the learning process (i.e. Brown et al., 1997; Marton et al., 1997; Falchikov, 2004; Gibbs, 2006). Hence, considerable interest has been directed towards making assessment a significant part of the students learning processes. A large amount of support for peer and self-assessment has been developed within educational research over the last two decades. Recommending student involvement in activities such as assessment and feedback is now frequently found in the higher education literature (Brown et al 1997; Dochy et al, 1999; Boud et al, 2001; Falchicov, 2004; Biggs, 2003; Bryan & Clegg, 2006).

Self and peer assessment have been found to enhance learning outcomes such as improved thinking processes (Falchikov 1995, Boud, 1995, Dochy et al., 1999), but also a help for the students to improve their own learning (Longhurst & Norton, 1997). Somerwell (1993) stresses that peer assessment is not only a grading procedure but also a part of the learning process through which assessing skills are developed. Zoller & Ben-Chaim (1997) found that motivation can be enhanced by creating an educational setting where self assessment is an inherent part of the learning process.

Most studies report positive expectations and perceptions of students regarding the contribution of self and peer assessment to their learning, but there are also studies showing the opposite (cf. Sambell et al., 1997; Falchikov 1991; Dochy et al., 1999). The students' attitudes seem to depend on the learning environment where the assessment procedure is implemented (Pope, 2005). Considerable interest has been directed towards studying the agreement between and accuracy in marking when student assess themselves and peers. Many studies show that students can achieve high accuracy but, again, this is due to the teaching and learning context. It is difficult to criticise friends and to assess oneself, so both over and under marking might be present (Falchikov, 1991; Strachan & Wilcox, 1996; Pond et al., 1995). One prerequisite of success is the clear setting of marking criteria and training the students in their use. The importance of the students being involved in creating and discussing the criteria is emphasised. The students' insight into the meaning of the criteria, actual practice and feedback in this process stand out as the main conditions for students' positive perceptions and accuracy in marking (Stefani, 1992, Boud, 1995; Adam & King 1995; Cheng & Warren, 1997; Hanrahan & Isaacs, 2001; Rust et al., 2003; Pope, 2005).

Responsibility and independence

The special interest in this project concerned involving students in assessment as a learning strategy for promoting their development of responsibility and independence in learning.

Research provides some results confirming the assumption that self and peer assessment enhance the students' ability related to responsibility. Dochy et al. (1999) conclude that the

combination of self, peer and co-assessment enables teachers and students to work together in a constructive way, and as a result they reach higher levels of understanding by means of negotiation. When students become involved in activities usually performed exclusively by teachers, the role change provides them with insights into the assessment process. Longhurst & Norton (1997) point out that students' involvement in assessment focuses their attention on metacognitive aspects of learning. Keaten & Richardsson (1992) report that peer assessment is a practice that can foster high levels of responsibility among students, requiring that the students be fair and accurate in the judgements they make. At Alverno College, Milwaukee, students take responsibility for their learning as an ongoing process. Part of this process is self assessment and it has been shown that students increase their ability to assess as time goes by (Mentkowski, 2006).

As mentioned above, criteria need to be clearly defined for the students, but this is not enough. The students also have to understand the tacit assumptions behind different criteria to be able to benefit as learners (Rust et al., 2003, 2005). It is essential to involve the students early in the process of understanding the criteria, and in peer assessment the criteria have to be discussed and understood by both groups of students concerned.

In an extensive field study (Silén, 2000) involving nursing students, the aim was to understand the students' experiences of a curriculum like PBL that requires the students to take responsibility for their own learning in the process of becoming professionals. As this study is considered to be of special relevance to this research, it will be described in more detail.

One significant finding in the study was a dialectic driving force between experiences of chaos, frustration and cosmos; the ability to find and form a structure (Silén, 2001). The driving force was a consequence of the challenge to make choices and made the students pose and handle questions concerning their own learning process; what, how, why, the goals and the outcome. The students assumed a role similar to that of a teacher and they found it especially difficult to trust their own ability to decide whether they had learned and what they had learned. The students handling of responsibility and independence, vis-à-vis dependence, was found to be related to a tension between the prerequisites provided by the educational framework and the students' interpretation of and ability to use them (Silén, 2003) (figure 1).
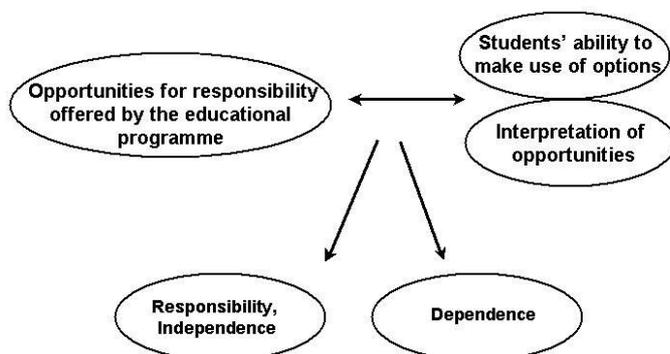

Figure1. A dialectic relationship which influences students' responsibility and independence (Silén, 2003,p 255)

The educational programme determines, by virtue of its framework and the teachers' interpretations, the opportunities for the students to influence their studies. One conclusion made from the study was that it is not enough to provide, challenge and invite students to take responsibility, they also have to be able to use their autonomy and understand what the opportunities mean in relation to choices and decisions made on their own.

In the same study (Silén, 2003), a determining factor influencing the students' interpretation of how they can influence their learning situation turned out to be connected to assessment. Expectations about the examinations directed the students' attention in a very obvious way. If the students did not feel that they understood the demands and got the feeling that there was a hidden curriculum, they started to look for "the right thing" to study instead of reflecting on what they really believe they needed to learn (cf. cue seeking). The assessment procedures and the students' uncertainty with respect to a hidden curriculum were recognised as the most critical parts to take into account when supporting growth towards autonomy in learning. Sambell and McDowell (1998) also describe how students make active constructions of both explicit and embodied subtexts when they try to figure out what the assessment is about. According to Polanyi (1998), both explicit and tacit knowledge is needed to understand messages, such as criteria, and Baumard (1999) argues that tacit knowledge only can be revealed through experiences. As long as the students do not feel that they can rely on their own judgement about the progress of their learning process and do not understand what is required, the search for "right answers" will dominate and they thus become dependent.

The project described in this article is based on the assumption that in order to support the students' development of responsibility and independence, assessment needs to be regarded as a mutual understanding between students and faculty. It is also recognized that becoming an informed, self-directed student is a learning process in itself, which is related to the actual context. Accordingly, the design of the examination situation described aims to genuinely involve the students in the assessment process. This aim applies to both groups of students in the project, but in this article the focus is on the situation of the students as peer examiners. In the context of this project peer stands for students within the same educational program but one semester ahead of the students being assed.

The project

Context
Students in the 6th semester in a PBL-based Masters program of Medical biology participated, together with faculty, as examiners of 5th semester students. PBL has been the basic pedagogical approach in all programmes at the faculty ever since it was established in1986. PBL is implemented in full in all the programmes, meaning that the whole curriculum in each programme is based on assumptions underpinning PBL. These assumptions are, in turn, based on pragmatism, meaningful learning, cognitive psychology and social constructivism.

All students begin their studies by attending a common course where PBL is introduced as the principal pedagogical philosophy and method. The students work with reality-based situations in small groups (6 – 9 students and a tutor) called base groups. An inquiring approach (processing problems) in learning is emphasised and demands on the students' own responsibility and independence in their learning process is characteristic of the interpretation of PBL at the faculty. Other strategies and forums for learning, such as resource sessions, seminars, lectures, skills training, practice within the professional domain, studies concerning

different resources (resource persons, books, journals, the Web) are regarded as parts of the PBL approach.

The medical biology program is a 4-year program leading to a Master of Medical Science in Medical Biology degree. The students (40 – 60 students/year) are recruited nationally and the grades needed to be accepted are among the highest in the biomedical field. Medical biology is a field including mainly medical and natural sciences disciplines. During the first 6 semesters (three years), each semester is organised as one course. In order to make possible a biomedical approach, traditional disciplines are integrated. This means that during the same course, the students study cell biology, chemistry, pathology, physiology, etc. in order to understand biomedical problems. Furthermore, the theoretical studies are combined with laboratory work introducing the students to modern bio-techniques.

Description of the examination situation

The assignment
The examination, aiming to be congruent with the learning process in PBL, is designed to assess understanding as well as information, communication and meta-cognitive competencies. The design is supposed to create the possibility to assess (*i*) specific cognitive competencies such as problem solving, including formulating questions and critical thinking, (*ii*) information competencies, such as searching for relevant information, making informed judgements, efficient use of information, analysing data, (*iv*) communication competencies, such as presenting data communicatively, both oral and written; *(v)* meta-cognitive competencies such as self-reflection and self-evaluation.

The theory and ideas behind the design of the examination and the criteria used in the examination situation have been developed at the faculty (Silén, 1998). These criteria relate to PBL and the five areas mentioned above. The specific criteria used in this project was discussed and agreed upon by all involved in the examination.

Realization
The examination is divided into three steps performed over three days (figure 2). In day I the 5th semester students are presented with a scenario that they study in depth. All students are presented with the same scenario. They hand in a written description of their line of thought, justifying it with relevant facts and theory. They also decide on a specific topic, derived from their line of thought, to study in detail. In day II, the 5th semester students study the specific topic chosen and prepare a presentation. Peer (6th semester students) and faculty examiners plan their opposition based on statements from day I. Day III consists of oral presentation, defence, opposing and grading. Throughout this text, the term examiner is used for all participating faculty and peer students. Formally, the examiner responsible is a member of faculty and all the other examiners have an advisory role.

Peer examiners
All peer examiners were volunteers and considerable effort was made to ensure that they did not have to examine a fellow student with whom they had conflicting ties. Since all the peer examiners had taken and passed this exam in the previous semester, they were quite familiar with the situation. They were prepared for this new role "sitting on the other chair" by means of a discussion on how to interpret the criteria in relation to the specific scenario and also

through discussions about professional behaviour. Faculty treated the peer examiners as colleagues.
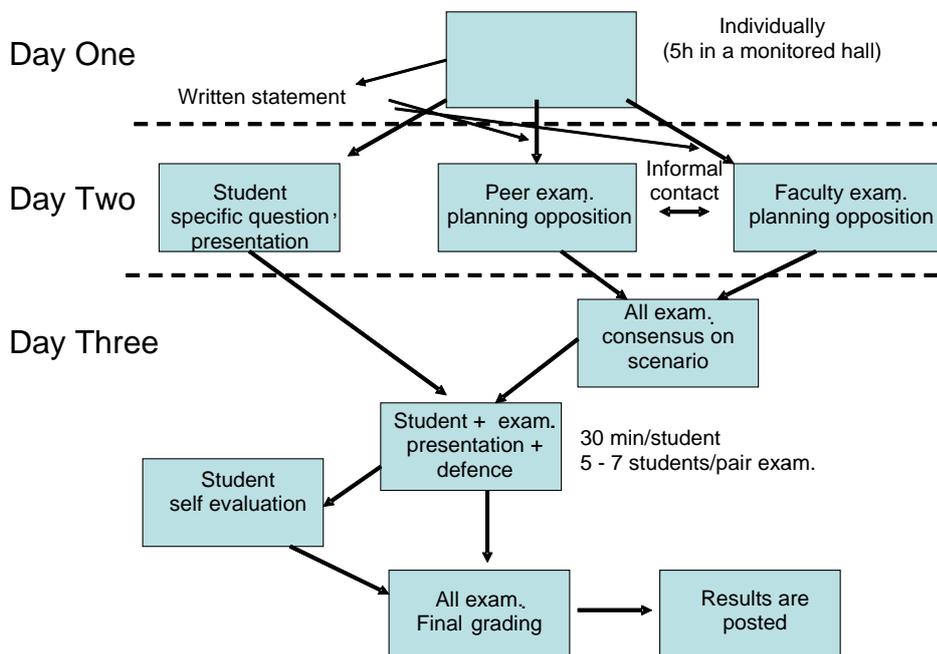

Figure 2. Flow chart describing the three day examination procedure, (exam. = examiners)

During day two, the examiners familiarize themselves with the scenario and the topics chosen in order to prepare their opposition on day III. The written statement serves the purpose of allowing the examiners to prepare, during day II, their opposition in relation to the criteria. The oral presentation and defence take place on day III. During day III, the 5th semester students are divided into groups of 5-7 students, and each group is assigned one faculty and one peer examiner. Each student gets 30 minutes to present his/her chosen topic to the two examiners (one peer and one faculty member). After the presentation, the examination is concluded with a self-evaluation. The self-evaluation is a part of the examination and its purpose is to stress the importance of being able to analyse and assess one's own performance. The students' evaluations also provide the examiners with statements on which to base their feedback.

The examiners use a protocol outlining the specific criteria during the exam to individually mark each student. During the 20 minutes scheduled between different students' presentations, the two examiners (faculty and peer) have an initial discussion about the grading, based on their individual thoughts related to the specific criteria. This discussion constitutes the basis for the final grading. The final grading is done during the concluding discussion with all the examiners.

Once all the students have given their presentations, the examiners gather to discuss and finalize grading and write comments after discussing any borderline students. This process is greatly helped by an initial discussion, before the actual exam starts, during which consensus is reached regarding the interpretation of the criteria in relation to the actual scenario. The

weight of each criterion in the final grading decision is also agreed upon. The day after the exam, the grades are reported to the students. The grades given are pass or fail. The students are also given written feedback on their performance. The examiners write statements explaining what they thought were good and not so good about each student's performance in relation to each criterion, including suggestions on how to improve.

Faculty examiners

Faculty examiners were all recruited from the medical faculty. All had some involvement in the Medical Biology program, but not necessarily in the 5th semester, and they were all positive to this type of examination. Furthermore, most of them participated on more than one occasion. However, none of them was a specialist in the field of human reproduction or pathology, which are the main themes in the 5th semester curriculum.

The research on the peer examiner project

The aim of the research was to try to understand students' learning processes related to the responsibility of assessing peers.

Methods

Data on a total of 139 students, 9 faculty examiners and 24 peer examiners were gathered through questionnaires given on six occasions to (*i*) students being assessed, who were asked open questions about how they perceived the situation of being assessed by their older peers, and if there were any differences between being assessed by peers and/or teachers; and (*ii*) students performing as peer examiners, who were asked open questions about perceptions of being an examiner, the relation to the students being examined, difficulties during the exam and how they used the assessment criteria. Data from teachers cooperating with students as examiners and teachers involved in designing the examination situation were collected in the form of written statements containing reflections about the peer examiners' behaviour, preparations, handling of questions in the oral part and their approach in assessing the younger students.

A qualitative approach similar to constant comparative analysis (Glaser & Strauss, 1967) was used when analysing the data. The data were read several times and central features of experiences in each group of respondents were identified and coded. The analyses were performed each semester, ending up with data from six occasions. All data over three years were compared, and similarities and differences related to central and recurring features about the examination procedure focusing on the peer examiners emerged. The statements from all respondents were very consistent throughout the project.

Findings

The following patterns were significant for the younger students' experience of being examined by older peers:
Confidence – Trust in the peer's ability to cope with the situation was one characteristic. Most students were anxious prior to the examination and some were hesitant about being assessed by their peers. This was mostly due to a fear of possible embarrassment. However, their hesitation and anxiety disappeared because their peers contributed to a more relaxed and

comfortable examination situation. The peers' ability to relate to their situation translated into a feeling of trust. They were also confident that their peers could judge what they were supposed to know in a fair way, since the peers had taken the same exam in the previous term.

Admiration – A significant feature that emerged was admiration for their peers' level of knowledge. They expressed appreciation of them asking tough, but helpful questions and the students got the impression that their peers were knowledgeable about the subject that was being assessed. Nevertheless, they noticed a difference between the peers' and the teachers' questions.

The role of peer examiner was characterised by the following patterns:
Ability – The peer examiners experienced their own ability during the examination. They noticed that they knew the subject well. This was shown in the questions they were able to ask and follow up and the fact that they were able to discuss the subject with the students and the teachers. They also felt that they could relate to the students' situation, understand how they thought about the subject and what they might find difficult.

Motivation – Participating in the examination procedure motivated the peer examiners in different ways. The situation of having to assess other students was considered to be a real challenge. They described the experience of being "on the other side" as very tough but also fun and interesting. The desire to really make a fair contribution made them prepare thoroughly.

Insights about assessment – Being "on the other side" led to the realisation that faculty is placed in delicate situations in the assessment - there is no white or black decision when it comes to passing or failing a student. It was felt that faculty made sincere efforts to be fair. They realised that the kinds of questions asked by faculty differed from the questions they themselves asked. Faculty questions were more about approaches to the problem-solving process and critical appraisal in addition to which faculty related their comments to many different references. Several peer examiners successfully adopted these new ways of asking questions. They did not find it hard to assess whether a student's contribution was acceptable or unacceptable compared to the criteria, but problems arose when they had to formulate written statements justifying their decisions. However, with increasing experience (seeing more students) it became easier for them to both assess and express their reasons. When it came to either passing or failing a student, they found it difficult to fail their fellow students because of the sensitive situation, not because it was difficult to assess the student's contribution as not being good enough.

The following patterns emerged from faculty experiences:
Agreement concerning judgements – The faculty examiners noted that there were agreement between the peer examiners and faculty as regards judgements about what was good and not so good and what would have been needed in order for the student being examined to satisfy the criteria. In the grading procedure, the peer examiners were also perceived as being able to stand up for their views. They argued clearly and referred to the goals and to their experienced consensus on what those goals meant in the curriculum for the 5th semester.

Complementary processes – The peer students made a valuable contribution by asking more detailed questions (related to the 5th semester curriculum) and in this way helped to set the level of what could be expected. The faculty examiners asked more general questions about

thoughts and reasoning and stimulated the student's elaboration of relationships between facts and the actual problem.

Well prepared – Faculty examiners pointed out that peer examiners were well prepared for the examination session on the third day of the examination. They had worked through the exam themselves and used it as a basis for preparing questions.

Interaction between examiners - Interaction between peer examiners and faculty worked smoothly during the examination. The flow between them when deciding about who was going to ask the next question, making encouraging and soothing comments to students who needed them, resolved itself naturally without any feeling of the teacher having to be the one in charge of the situation. The peer examiners also managed to maintain an appropriate distance to the fellow students and behave as examiners.

DISCUSSION

The educational context and the examination procedure related to the experiences of the students and teachers involved form the basis of a discussion about how to understand students' learning processes related to the responsibility of assessing peers.

Significant features of this examination were that it is implemented in regular education, it is an end-of-course examination and older students assess younger students. Conventionally the term peer implies that the students involved are at the same educational level. However, we believe the difference in the educational level (6th vs. 5th semester) was a prerequisite for the successful participation of students as peer examiners in this project. The fact that the peer examiners were one semester ahead, and thus regarded as more knowledgeable, made it uncontroversial for the examinees to accept them as examiners. Furthermore, the educational context, PBL, is based throughout the curriculum on approaches aiming at supporting the students to become self-directed learners and thus also the exam was designed to correspond with PBL. Findings show a promising picture of older students as peer examiners in this context, and all the participants through the years report a positive attitude towards the procedure.

The features that emerge concerning the peer examiners indicate that their participation supports development of abilities needed to take responsibility in learning.
They discover their own knowledge and ability and they gain insights about the examination and assessment criteria. Faculty and younger students show that they believe the peer examiners are capable of making relevant judgements. Faculty also says that the peer examiners manage to act professionally and interact with faculty like a colleague when handling the examination procedure.

Below, we discuss three areas, based on our findings, which stand out as especially important when the aim is to support students' development towards taking responsibility and becoming autonomous in learning.

Motivation

One assumption in this study was that responsibility and independence in learning requires a separate learning process. Hence, driving forces that stimulate learning are essential. The

findings in this study indicate the presence of several factors that stimulate the students' motivation to gain a deeper understanding of assessment. These factors are feedback, challenge and experiences of managing.

Getting feedback is known to be very important in the learning process. In this case, the peer examiners receive different kinds of feedback concerning their knowledge and abilities as a result of their participation. They experience and can compare different qualities related to the younger students' work and performance. We believe this is feedback we usually do not give our students, who only get to see their own work, while the teachers receive many pictures of how an assignment can be carried out. Hanrahan & Isaacs (2001) emphasised the importance of students getting pictures of good and bad work in order to compare.

Another kind of feedback is that the peer examiners listen to the teachers' questions and arguments during the examination and thus get something with which to compare the relevance and accuracy of their own thoughts. They notice that the teachers ask other kinds of questions and some try to imitate this. Discussing the meaning of the qualitative criteria and applying them together with the teachers also gives them feedback on their own assessment compared to that of the experienced teacher. They get further feedback on their own level of knowledge since they have the opportunity to compare with the previous semester. They also "study" the same subject area once more and gain insights into what a deeper level means.

Taking on the responsibility of being a peer examiner is a real challenge. The peer examiners are assumed to be able to handle a very important issue in education. The results indicate that the students take up this challenge, they are well prepared and act professionally and thus they are trusted, accepted and even admired by the students who are being assessed. Experiencing this is a great reward and recognition of their ability and gives them a feeling of doing something important as well as boosting their self-confidence. Many of the peer examiners say that they enjoy the situation. The feeling of being able to manage can be assumed to strengthen the motivation to become involved in assessment in order to learn something more than just the subject.

Learning by involvement and trust

Faculty shows their trust in the students by involving them as examiners. They are invited into the very heart of what is usually only done by teachers. The procedure is real, it is not just a formative assessment; it is important and the peer examiners have the same role as the teacher. As pointed out before, the students take on the responsibility and the authors are convinced that this is linked to a large extent to the fact that faculty really show that they regard them as equal partners.

Truly involving the students mean that the tense and significant assessment situation becomes more transparent to all the students and the risk of a hidden curriculum is reduced. A climate of mutual trust and respect is created to handle uncertainty. Referring to the reasoning about the students adopting survival strategies when they are stressed, we would claim that openness and more explicit documents, in this case about examinations and criteria, are crucial when it comes to providing the students with the chance of taking charge of their learning (Silén, 2003).

Learning tacit knowledge

Even if the teachers do not mean to hide the agenda, the students might perceive that to be the case. A common reason is that it is difficult to understand the meaning of criteria even if they are stated and presented. Perhaps this is the most difficult issue to address and we believe this study provides some knowledge that can be useful.

As peer examiners, the students gain insights and increased knowledge related to assessment. They notice how teachers pose questions and realise that even faculty need to carefully consider their judgements and that the interpretation of qualitative criteria is not self-evident. In the process, they feel that they gain a better understanding of grading and they grow in their ability to justify their own judgements. Faculty also judges the peers' behaviour as very professional. This can be explained by the fact that the students learn from observations they make, the dialogue with faculty and the practice they get from being a part of the procedure. In the preparations preceding the examination, the thoughts and intentions behind the examination were discussed, stressing that their role (as well as that of the faculty examiners) in addition to grading is also to help the student to feel comfortable in the situation and remove some of the stress. This is probably a very important addition to the students' tacit knowledge. Some of the tacit knowledge also concerns the empathy with faculty that was expressed by the peer examiners. In a study by Hanrahan & Isaacs (2001), which described patterns and crucial themes related to self and peer assessment, a similar empathetic factor was found.

Conclusions

Several studies emphasise that in order to understand an examination procedure and assessment criteria, the students need explicit as well as tacit knowledge (Boud, 1995; Polanyi, 1998; Rust et al, 2003, 2005). In the interpretations of the students' statements in this study, there is much to suggest that this can be achieved using this kind of examination procedure.

Researchers dealing with self and peer assessment point out that the learning processes connected with responsibility and independence seems to be linked to metacognitive competencies related to the student's understanding of his/her own learning processes. We would argue that the examination procedure described here provides possibilities for the student to apprehend such metacognitive competencies. Assessing younger students together with faculty makes it possible for the peer examiners to compare their own learning and at the same time interact with faculty, thus enabling a perspective that adds another level of understanding of assessment.

If the students are invited to participate and to discuss the purpose, form and criteria they do not seem to have problems accepting this type of examination. It is also important that these students in the medical biology program have been accustomed to PBL throughout the program, that is to say, student-centred learning. They have practised self- and peer evaluation in their small groups throughout the program, they get formative feedback on their performance and they have been given more and more responsibility for their own education. We believe this to be a crucial element when self and peer assessment is used in an examination and again we want to stress that becoming responsible and autonomous in learning seems to require a separate learning process. However, in order to understand the full impact of PBL on this procedure a similar study involving students in a more traditional educational setting would have to be performed.

REFERENCES

Adam, C., King, K. (1995) Towards a framework for student self-assessment. *Innovations in Education and Training International*, 32, pp. 336-343.

Baumard, P. (1999) *Tacit knowledge in organizations* (London, Sage Publications).

Biggs, J. (2003) 2nd ed. *Teaching for Quality learning at University* (Buckingham, SRHE/Open University).

Bryan, C., Clegg, K. (Eds), (2006) *Innovative Assessment in Higher Education* (London, Routledge).

Boud, D., Cohen, R. & Sampson, J. (Eds.) (2001). *Peer Learning in Higher Education: Learning with and from each other* (London, Kogan Page).

Boud, D. (1995) *Enhancing learning through self-assessment*. (London, Kogan Page).

Brown, G., Bull, J., Pendlebury, M. (1997) *Assessing student learning in higher education* (London, Routledge).

Cheng, W., Warren, M. (1997) Having second thoughts: student perceptions before and after a peer assessment exercise. *Studies in Higher Education*, 22, pp. 233-239.

Dochy, F., Segers, M., Sluijsmans, D. (1999) The use of Self-, Peer and co-assessment in Higher Education: a review. *Studies in Higher Education*, 24 (3), pp.331-350.

Falchikov, N. (1991) Group process analysis. In S.Brown & P. Dove (Eds) Self- and Peer assessment, pp 15 – 27, Birmingham, Standing Conference on Educational Development, Paper 63.

Falchikov, N. (1995) Peer feedback marking: developing peer assessment. *Innovations in Education and Training International,* 32, pp 175-187

Falchikov, N., (2004) *Improving assessment through student involvement: practical solutions for higher education teaching and learning* (London, Routledge).

Gibbs, G. (2006) How assessment frames student learning. In C. Bryan & K. Clegg (Eds) *Innovative Assessment in Higher Education* (London, Routledge).

Glaser, B., Strauss, A., L. (1967) *The Discovery of Grounded Theory, Strategies for Qualitative Research*. (Chicago, Aldine).

Hanrahan, S., Isaacs, G. (2001) Assessing self –and peer assessment: the students' views. *Higher Education Research & Development*. 20 1), pp.53-70.

Keaten, J.A., Richardson, M.E. (1992) A field investigation of peer assessment as a part of the student group grading process. Paper presented at the Western Speech Communication Association Convention, Albuquerque, NM.

Longhurst, N., Norton, L.S. (1997) Self-assessment in coursework essays. Studies in Educational Evaluation, 23, pp. 319-330.

Marton, F., Hounsell, D., Entwistle, N**.** (1997) *The experience of learning* (Edinburgh, Scottish Academic Press).

Mentkowski, M. (2006) Accessible and adaptable elements of Alverno student assessment-as-learning: strategies and challenges for peer review. In C. Bryan & K. Clegg (Eds) *Innovative Assessment in Higher Education* (London, Routledge).

Polanyi, M. (1998) The tacit dimension, in Prusak, L. (ed) *Knowledge in organization* (Boston, Butterworth Heineman).

Pope, N. (2005) The impact of stress in self-and peer assessment. *Assessment & Evaluation in Higher Education,* 30 (3), pp. 51-63.

Pond, K., Ui-Haq, R., Wade, W. (1995) Peer review: a precursor to peer assessment. *Innovations in Education and Training International,* 32, pp. 314-323.

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

Rust, C., O'Donovan, B., Price, M (2005) A social constructivist assessment process model: how the research literature shows us this could be best practice. *Assessment & Evaluation in Higher Education,* 30 (3), pp. 231-240.

Sambell, K., McDowell, L., Brown, S. (1997). The value of self and peer assessment to the developing lifelong learner. In C. Rust (ed) *Improving Student Learning - Improving Students as Learners,* pp 56-66 (Oxford, Oxford Centre for Staff and Learning Development).

Sambell, K., Mc Dowell, L. (1998) The construction of the hidden curriculum: messages and meanings in the assessment of student learning. *Assessment & Evaluation in Higher Education,* 23(4), pp391-402.

Somervell, H. (1993) Issues in assessment, enterprise and higher education; the case of self-, peer- and collaborative assessment. *Assessment & Evaluation in Higher Education,* 18, pp. 221-233.

Silén, C. (1998) Understanding and qualitative assessment. In C. Rust (ed) *Improving Student Learning - Improving Student Learning Outcomes,* pp 182-190 (Oxford, Oxford Centre for Staff and Learning Development).

Silén, C. (2000) *Mellan kaos och kosmos - om eget ansvar och självständighet i lärande.* (Between chaos and cosmos – a driving force for responsibility and independence in learning) Linköpings universitet: Department of Behavioural Sciences, Doctoral thesis n 73.

Silén, C. (2001). Between chaos and cosmos – a driving force for responsibility and independence in learning. In *The power of problem based learning, PROBLARC, The 3rd Asia Pacific conference on PBL, 9-12 December 2001,* pp 126-133 (Newcastle, The University of Newcastle, Australia).

Silén, C. (2003). Responsibility and independence in learning – What is the role of the educators and the framework of the educational programme. In C. Rust (ed) *Improving Student Learning – Theory, research and practice*, pp 249-262 (Oxford, The Oxford Centre for Staff and Learning Development).

Stefani, A. J. (1992) Comparison of collaborative, peer-, self- and tutor assessment in biochemistry practical. *Biochemical Education*, 20, pp. 148-151.

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, pp. 343-353.

Zoller, Z., BenChaim, D. (1997) *Student self assessment in HOGS science examinations: is it compatible with that of teachers?*. Paper presented at the meeting of the European Association for Research and Learning and Instruction, Athens, Greece.