The Power of Peer Feedback in the Master Programme Learning & Innovation

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Abstract

This article describes how peer review is applied in a Master Programme to enhance learning and professional development. First the concept of feedback is explored, followed by the way peer review is applied in different stages of product development and learning, and how it is supported in the electronic learning environment. This practice will be presented, the ‘look and feel’ of the peer review process might be experienced, and opportunities for research will be discussed.

Introduction

Inholland University of Applied Sciences offers a Master Programme Learning & Innovation for (experienced) teachers to acquire additional expertise in educational theory, instructional design, implementation theory and educational change. The students also develop skills in educational leadership to become change agents in their schools and/or teams. The Master Programme curriculum is based on the pedagogical concept of constructivist learning which implies debate and discussion to stimulate deep learning and conceptual change (Bereiter, 2002; Bruffee, 1993; Geelan, 1997). Peer review is considered a specific type of interaction within this context, aimed at students providing each other feedback on concepts, products or assessing each other’s final products. First, the design of the Master Programme curriculum will be briefly introduced, followed by an exploration of the concept of peer feedback, as well as the way this concept is applied in the Master Programme.
**The Master Programme Curriculum**

The four-semester part-time Master Programme is meant for teachers with at least five year experience who have the ambition to become involved in processes of educational change in their organizations. The first and second semester courses are aimed at exploring the domains of learning and innovation, the third and fourth semester are reserved for the Elective Course and the Master thesis. The pedagogical concept of constructivist learning implies discussion, and therefore interaction between students to foster deep learning and the (re)construction and acquisition of knowledge to develop understanding. The codified knowledge (theory) is being confronted and combined with tacit knowledge to produce a shared knowledge to be applied in practice. The transfer from theory to practice is stimulated and supported by assignments students have to carry out. During the first and second semester students develop thinking and writing skills by studying and discussing instructional theory, by doing literature research, and by producing academic papers. Understanding of research methodology and research skills are being developed by studying and discussing literature on methodology and carrying out exercises in designing practice-based research. Additionally, acquired knowledge and skills must be transferred to the professional practice through assignments in instructional design and organizational change. In the third semester of the Master Programme (Elective Course), a collaborative learning assignment must be carried out and the students start preparing the Master-thesis research. In the final semester, practice-based research is individually carried out, resulting in the Master thesis. Product development in all assignments is divided into stages, similar to the organization of a project. Four stages are being distinguished, resulting in respectively first idea and preliminary problem statement, definition statement, product concept and final product. The final product must be submitted to the tutor for assessment. The definition statement is the outcome of an exploration of the assignment, and must result in defining the subject of research, the goals and objectives, and the research strategy. After
approval of the definition statement, a product concept has to be developed, which will also be reviewed. The final product must be developed by processing the feedback provided by peers and experts, and should be presented and submitted for assessment and grading.

The design of the curriculum is based on the principle of ‘effective interaction in learning practices’ (Fransen, 2006a, 2007), and this principle is also reflected by the design of the electronic learning environment of the Master Programme (Fransen, 2006b). In the learning process ‘learning by distributing’ (individual learning), ‘learning from feedback’ (learning in interaction), and ‘learning from different perspectives’ (collaborative learning) are combined to maximally support the professional development (Reinmann-Rothmaier, 2003). Also, the concept of blended learning was purposively applied to support the learning process through optimally combining real-time presentations and workshops with activities in the electronic learning environment, parallel as well as subsequently.

**Feedback and Peer Feedback**

Feedback, especially formative feedback, is a specific type of interaction in learning practices and a powerful instrument to enhance deep learning (Marzano, 2007), provided that feedback is supportive, timely, specific and credible (Shute, 2007). Feedback is conceptualized here as information regarding aspects of one’s performance or understanding, and although feedback usually should be distinguished from instruction, formative feedback also implies a form of additional instruction to fill the gap between the current and desired understanding. Feedback is more effective if it is directed at the task, the process and/or the regulation of learning, but not on the self. Additionally, feedback must build on the student’s prior knowledge and must provide logical connections, otherwise instruction will be more effective (Hattie & Timperley, 2007).

Receiving effective feedback may enhance learning if feedback is adopted and used. Also, providing others with feedback has an effect on the quality of learning and understanding of
the feedback giver, sometimes even more than just receiving feedback from peers, although low proficiency learners tend to profit more from providing peers with feedback than high proficiency learners (Lundstrom & Baker, 2009). Providing and receiving feedback requires a safe group climate, the ability to deal with the complexity of multiple judgments, sufficient understanding of the subject matter, and good timing to prevent that frustration takes over (Hattie & Jaeger, 1998). Also, costs and benefits of peer feedback procedures have to be well balanced, which means that peer feedback procedures should be calculated within the overall time on task and peer feedback should be effectively tuned with the timing of expert feedback (Guardado & Shi, 2007). Adequately introducing peer feedback and expert feedback within processes of product development, results in assessment becoming mainly formative and the final summative assessment becoming less important. As a result of that, assessment becomes more meaningful and effective, since learning and assessment are fully intertwined, leading to better results of long-term learning (Boud & Falchikov, 2006). Also, providing peer feedback online seems to be more effective than providing feedback face-to-face, and successful uptake of feedback is more likely if feedback contains concrete suggestions directly linked to specific parts of texts students produce (Van der Pol, Van den Berg, Admiraal, & Simons, 2008).

**Peer feedback in the Master Programme**

Peer feedback is considered important within constructivist education, and especially within professional development of teachers. Being competent in effectively applying feedback in managing one’s professional development, as well as providing effective feedback to peers, is not only considered fundamental for an expert teacher, it is also conditional for professionals supporting their colleagues in processes of curriculum development and educational change. Therefore, peer feedback is considered an important and powerful instrument within the curriculum of the Master Programme and peer feedback processes are organized in several ways during the four semesters.
The assignments for product development are organized similar to project-based education, which implies that stages are distinguished in the process resulting in products to be reviewed and/or assessed, in this case respectively the phase of idea development, the definition phase, the concept phase, and the final product development. Peer feedback and expert feedback are used in all phases differently, but in every phase supported by using specific applications in the electronic learning environment. Results of peer-feedback processes are being discussed in real-time meetings in the institute. Peer feedback is supported explicitly by discussing the value of peer feedback and feedback procedures with students and by offering them tailor-made checklists and feedback criteria. The quality of peer feedback is monitored by tutors (i.e., the experts) in the Master Programme.

Two principles are leading in organizing the peer review, more specifically regarding the type of activities students have to carry out and the way these activities are being supported within the electronic learning environment. The first is the sequencing of product development; the second implies the functionalities of applications within the electronic learning environment. Every stage in product development leads to a specific result with its own characteristics. In order to produce a paper to research report of a literature survey, for instance, students have to choose a research topic first and must pose a preliminary research question. The development of a definition statement will be the next step and implies the posing of a problem statement and the research questions, the argumentation for the relevance of the research regarding the perspective of the course the student is attending, some valid references, and an analysis of the feasibility of the study. The definition statement must result in a document containing no more than 800 words. The following step implies the development of a concept version of the product, and the last step is the development of the final product. Feedback must be provided after completion of each stage, which implies formative feedback on first ideas and problem statement, on the definition statement, and on the product concept. Summative feedback is
provided after submitting a final product. Feedback has to be different of nature according to the stage in the process, the needs of the feedback seeker, and the nature of the product that must be developed. Feedback on the first idea and problem statement must be limited and should only be a brief reflection on this first idea and problem statement, aimed at discussing the relevance and feasibility of the product the student intends to develop. Feedback on the definition statement must be more elaborate and should address the topics of the definition statement, more specifically the topic of relevance of the proposal, the topic of the quality of the problem statement and research questions, the topic of the validity of proposed references, and the topic of feasibility. To achieve these intentions and to support the process of peer feedback, students are provided with evaluation questions and criteria regarding the issues that must be addressed in the review process. Feedback on the definition statement must be as concrete as possible and of undisputable quality, since it is conditional for the quality of the concept that someone will develop. This implies that the quality of peer feedback in this stage should be carefully monitored by the expert and the peer feedback must be supplemented by expert feedback. Expert feedback should not be provided before the end of the peer review process, since students are more reluctant to provide feedback to peers once expert feedback has been published. Feedback on a product concept must be more elaborate, which implies that students may comment in detail on parts of the argumentation, as well as on the quality and structure of the report itself. A product concept may be a large document, and assessing the outcomes of literature research implies that a feedback giver is well introduced in the field expertise of that particular research. This is why peer review will probably be more effective if organized in small groups of students working on products in a similar field of expertise, which was confirmed by findings of research on peer feedback (Van den Berg, Admiraal, & Pilot, 2006). Since the product concept must be developed on the basis of the final definition statement, and also because at least two peers must provide feedback on the product concept,
monitoring the quality of the peer review process is important. Poor quality of provided peer feedback and/or if only one peer provides feedback, additional expert feedback is important for a student to develop the final product. If the feedback provided by peers is of high quality, monitoring the peer review process and randomly evaluating the quality of feedback should be sufficient.

The electronic learning environment of the Master Programme is based on the ‘open source’ software policy, because this type of software offers possibilities for adapting it according to the needs and wishes of teachers and students in particular learning practices. Also, students enrolled in the Master Programme Learning & Innovation must experience what technology has to offer for the enhancement of learning processes. The Master Programme portal is based on Moodle, and nearly every functionality of Moodle is operational. The activities in Moodle are under control of the teachers, although students are offered several options to add content to the portal, to start and/or moderate discussions, and to manage a personal calendar. Three Moodle functionalities are being used in the peer review process, more specifically the forum (discussion board), the workshop, and the assignment. The forum is used for peer review on the first idea and problem statement. Every student starts his or her individual ‘thread’ and posts a first idea and preliminary problem statement. All students from the whole class are invited to comment and provide feedback. The peer review process is monitored by the tutor and outcomes are being discussed in the next plenary meeting (master class). The workshop is used for peer review on definition statements. Every students uploads a definition statement and the Moodle workshop randomly divides the feedback tasks among all students enrolled in this workshop. Depending on how the Moodle workshop is set, a student provides feedback on definition statements of at least two peers based on a built-in set of review questions with additional feedback criteria. When the peer review process is completed, additional expert feedback is provided, if necessary. Students adapt their definition statements by processing
the feedback, and when finished they upload the improved version of the definition statement to a Moodle assignment on behalf of the discussion and evaluation in the next plenary session. The experts prepare the discussion through scanning the uploaded definition statements. After this session, the development of the product concept starts and students have to upload their completed product concepts to the Annotation Tool©, a freely accessible application for peer review. The peer review in this environment is organized in small teams, consisting of four to five students. Every student provides feedback on product concepts of two or three peers in their team, depending on what was agreed regarding the peer review procedures. Additional feedback is provided by the experts. The Annotation Tool© offers the functionalities for rating and discussing feedback. In Figure 1, a screenshot is presented of the Annotation Tool© with a document page on the right side and comments of peers on the left side.

Figure 1. Screenshot of the Annotation Tool© with page of document (right) and comments of peers (left).

The Annotation Tool© was developed by Dr. J. van der Pol and being used on behalf of his PhD Research on peer review and peer feedback. The Annotation Tool© is now freely accessible for educational purposes (www.annotatiesysteem.nl).
After completing the review process, students can print their documents with all comments included to process the feedback and develop the final product. The final products must be uploaded to a Moodle assignment, especially set for this purpose, after which these products will be assessed and graded. Summative feedback will be provided separately by the expert. Students can also organize additional peer review activities themselves by linking personal learning environments (i.e., a blog or Facebook© page) to the Moodle Course of the Master Programme, and asking peers to review the products they published in there. Final products are also published in the Master Programme Section of the Learning Network of the Faculty of Education. All in all, the choice of applications in the peer review process is driven by the type of products under review and the type of feedback that is needed, which is reflected by the design of the electronic learning environment of the Master Programme (See Figure 2).

Figure 2. Design and functionalities of the electronic learning environment of the Master Programme.
The process of peer review is summarized in a diagram (See Figure 3), in which stage in the process, type of product being reviewed, type of feedback that is needed, type of application or activity, grouping and roles of students and tutors are presented.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Type of Product</th>
<th>Feedback Criteria</th>
<th>Activity and Support</th>
<th>Grouping</th>
<th>Locus of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Idea and problem statement</td>
<td>Peer feedback on idea and problem statement, more specifically on the relevance for a Master Course.</td>
<td>Individually posting it in the Moodle forum by starting a personal discussion thread.</td>
<td>The whole class</td>
<td>Tutor organizes peer review and students are free to choose who to provide feedback.</td>
</tr>
<tr>
<td>2</td>
<td>Concept definition statement</td>
<td>Peer feedback on relevance, goals, research question, references, and the feasibility analysis.</td>
<td>Uploading definition statements to the Moodle workshop and feedback is provided by peers and tutors using built-in criteria. Expert feedback is added after closure of the workshop.</td>
<td>Providing feedback to a few peers, according to workshop settings.</td>
<td>Tutor organizes peer review and feedback tasks are randomly assigned by Moodle.</td>
</tr>
<tr>
<td>3</td>
<td>Adapted definition statement</td>
<td>Additional expert feedback on goals, research question, references, and the feasibility analysis by focusing on most instructive examples.</td>
<td>Uploading adapted definition statements to the assignment in Moodle, discussing outcomes of review process in the next plenary session to be prepared by the tutor.</td>
<td>The whole class has to attend the plenary session.</td>
<td>Tutor prepares the session. Highlights and pitfalls will be discussed under supervision of the tutor.</td>
</tr>
<tr>
<td>4</td>
<td>Product concept</td>
<td>Peer feedback and additional expert feedback on the consistency of the argumentation and the validity of the references and conclusions.</td>
<td>Uploading concept products to the Annotation Tool and providing feedback on concept products of at least two peers. Additional expert feedback is provided after closure of the peer review process.</td>
<td>Peer review is organized in teams of four to five students.</td>
<td>Tutor organizes peer review and students choose which members of their team they will provide with their feedback on the product concept.</td>
</tr>
<tr>
<td>5</td>
<td>Final product</td>
<td>Summative expert feedback to be used for assignments to come is separately provided along with grading.</td>
<td>Uploading the final products to a Moodle assignment which is especially set for this purpose.</td>
<td>Tutor will provide summative feedback to individual student.</td>
<td>Tutor organizes the assessment, grading, and the communication of summative feedback.</td>
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Figure 3. The review process with stages, type of product, type of feedback, grouping, and locus of control.
Workshop and discussion

This workshop offers an introduction on feedback and peer feedback, as well as on how peer review processes are organized in the Master Programme Learning & Innovation courses and how they are supported in the electronic learning environment. Participants in the workshop may experience the effectiveness of peer review by using the specific Moodle functionalities themselves. Results of a small assignment will be discussed, as well as the expected added value of peer review in the perspective of the professional development of teachers. Finally, the organization of effective peer review in different educational setting will be explored and opportunities for research will be discussed.

References


