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Reflection on Peer Reviewing as a Pedagogical Tool in Higher Education

Previous research has emphasised both the importance of giving and receiving peer feedback for the purpose of active learning, as well as of university students' engagement in reflection to improve learning outcomes. However, requiring students to explicitly reflect on peer reviewing is an understudied learning activity in higher education that may contribute to the utilisation of peer-feedback and promote further learning. In this study, we suggest reflection on peer reviewing as one approach to providing a platform for students to engage in reflective practices and for stimulating active learning in higher education, and to make that learning visible to the educator. We examine 26 undergraduate students' reflections on peer-review to identify categories of reflection and what students have learnt from the peer reviewing process. Our findings reveal six different categories of reflection suggesting students' active engagement in learning and pointing to the ways educators can direct and instruct students how to reflect. We discuss how these findings can inform university lecturers in the use of reflection upon peer reviewing as a pedagogical tool in higher education.

Keywords: feedback, higher education, learning, peer review, reflection

Introduction

In this study, we bring together two important processes in higher education teaching and research - reflection and peer review (or peer-feedback) - and discuss how entwining both can help educators promote active learning that fosters students' reflective skills and feedback reception. We suggest reflection on peer reviewing - both on the feedback the student received *and* provided - as one approach to providing a platform for students to engage in reflective practices and hence, helping them foster their reflection. The value of reflection and various reflective practices in higher education has been widely recognised (e.g., Ash et al., 2005; Canning and Callan, 2010; Coulson and Harvey, 2013; Smith, 2011; Kaasila and Lauriala, 2012). Research literature portrays reflection as important for both learning and improving students' academic performance (Radovic et al., 2021; Veine et al., 2020; Bulpitt and Martin, 2005). On the other hand, in our work as educators in higher education, we observed that reflection is not employed in all study disciplines resulting in the situation where students do not reflect well or might not even know how to. This is also evidenced in prior research which suggests that students' work is commonly not highly reflective (Dyment and O'Connell, 2010). One practical barrier to students' reflection we encountered in our practices is also that students do not always even read the feedback they receive from their peers. In fact, little research has been done on *how* students reflect on received peer feedback and on the process of peer reviewing in general. The knowledge on this matter would be valuable to support educators in better guiding their students in how they should reflect on peer reviews, encouraging students' active role in generating, processing, and responding to the feedback received (Carless, 2020; see also Henderson et al., 2019). It could also help us minimise the gap between given and received feedback, as well as its actual use (Cartney, 2010).

Another set of challenges regarding peer reviewing and reflection in higher education can be observed on the educators' end. Many educators working outside of the education discipline do not feel qualified to stimulate their students' reflection due to the lack of pedagogical background and knowledge on various pedagogical approaches that could stimulate the reflective processes. However, research suggests that careful design of the activity is needed for peer feedback to be effective (Wanner and Palmer, 2018). For example, explicit reflection on received feedback, such as one in the form of specific reflective tasks, has been noted as a crucial step in

the learning process and in successful peer-assessment (Ryan, 2013; Pearce et al., 2009). In addition, for educators it may be difficult to assess whether any – and what kind of – learning has taken place through a peer review activity.

This study was, therefore, motivated by the need to encourage students to read the peer feedback they receive, and then think about how to improve their work based on that feedback. Educators who want to support their students to deepen their learning are also in need of understanding *how* students reflect so they could better guide students' reflective processes. In an attempt to close these gaps, we conducted a study in which we asked students to purposefully reflect both on peer reviews they provided to and those they received from their peers. We ask the following research question: *How do students reflect on peer review and how does this activity make students' learning visible?*

To answer this question, we examine here 26 students' reflections on peer reviews to identify categories of reflection on peer reviewing that in fact students have learnt from the peer-reviewing process. We make two important contributions. First, we demonstrate that reflection on peer reviewing is a suitable tool to make students' learning from peer reviewing visible. Second, the knowledge obtained is then used to provide a discussion on the use of reflection on peer review as a pedagogical tool for stimulating active learning in higher education, as well as more clearly direct and instruct students how to reflect.

Peer reviewing as a reflective practice in higher education

We understand reflection as a phase in a learning process, one in which students consciously analyse their experiences to achieve a new way of understanding or of finding new, alternative ways to act (Jarvis, 1987). As such, it can occur in conjunction with any other learning activity, such as peer reviewing. In the context of peer reviewing, previous research uses various terms such as 'peer assessment', 'peer review', 'peer feedback' or 'peer grading'. In part, these terms can be understood as synonyms, on the other hand, they can have different meanings. For example, Liu and Carless (2006) distinguish between peer feedback and peer assessment. Peer feedback is characterised by rich comments, whereas peer assessment refers to grading. In contrast, Søndergaard and Mulder (2012) distinguish between peer assessment, by which they refer to the case when students assess other students' work and provide feedback, and peer grading, by which they mean that students grade their peer's work and this grade has an effect on the peer's final mark. In this study, we subscribe to Nicol et al.'s (2014) definition of the term peer review, which is understood "as an arrangement whereby students evaluate and make judgements about the work of their peers and construct a written feedback commentary. In effect, students both produce feedback reviews on others' work and receive feedback reviews on their own work." (p. 103) Arguably, giving and receiving peer-feedback is a strategy that promotes active learning (Odom et al., 2009) and is an end in itself as students learn both from doing peer reviews, and through meta-processes such as 'reflecting on and justifying what they have done' (Liu and Carless, 2006, p. 289). Students' reflection upon feedback received has, therefore, been deemed important for the uptake of the received feedback (e.g., Ryan, 2013; Pearce et al., 2009; see for review Hattie and Timperley, 2007).

Numerous advantages both cognitive and noncognitive of peer reviewing have been identified in the research literature (Li et al., 2020). For example, it can increase students' performance (see for review, Li et al., 2020), it can help students improve the work they submit for assessment (Reily et al., 2009), and it helps improve students' writing process (Baker, 2016; Huisman et al., 2018), it allows students to obtain a more diverse feedback compared to the feedback that is coming solely from the instructor, and peer review also supports the development of various skills such as those of evaluation, diagnosis, summary and professional communication (Falchikov, 2007). Reinholz (2016), for example, presents a model for learning through peer assessment consisting of six key components: task engagement, peer analysis, feedback provision, feedback reception, peer conferencing, and revision. Feedback reception, for example, helps students look at their work from an outsider's perspective, whereas feedback provision requires students to describe to their peers how they analysed their peer's work. Arguably, students need to develop their ability to give feedback, but they also need to be able to take steps towards learning from received feedback (e.g., Higgins et al., 2002; McCune and Hounsell, 2005). In addition, peer reviewing promotes active learning (Odom et al., 2009). Moreover, peer reviewing can enhance deep learning, as students see their peers' examples of good and bad

practices, which further encourages students' engagement in self-reflective practice (Pearce et al., 2009). However, for these benefits to actually play out, students need to be able to receive and uptake the feedback (Winstone et al., 2017; Carless and Boud, 2018). For these purposes, we propose reflection upon the peer review as a way of taking up the feedback given by others as well as reflecting upon one's own learning to encourage reflective practices of students in higher education.

Methodology

Data collection

The empirical data for this study were collected during a software business development course at a Finnish University. Overall, 40 students in their first or second year of master's studies of information processing science participated in the course. One major outcome produced by the students quite in the beginning of the course was a description of the software product idea they had invented in teams of 3-5 students, the "product description". In the product description, the team had to describe what the software product is and what functionalities or features it has, who the potential customers for this product are, what benefit the product provides to these customers, and what the revenue mechanism of this product is. The product descriptions were made visible to all students. Each student then had to write a peer review about one other team's product description, and the students were expected to improve their product description based on the received peer feedback and based on what they learned when reviewing another team's work. After having provided and received peer feedback on the product description, students were asked to write a reflection on the peer review. In this research, we focus on the reflection each student wrote on the peer review of the product description.

The goal of this activity was twofold. First, the peer reviews each team received should help the team improve their own product description before it would be evaluated by the teacher. Giving the students an opportunity to revise their work before submitting their final work for evaluation by the teacher has been identified as an important step in learning from peer reviewing (Reinholz, 2016). Second, to facilitate the reception of the feedback received and overall learning, students were required to reflect on the peer reviews they had received, but also on the peer review they had provided, as previous research shows that learning in peer reviewing takes place also when writing a peer review (e.g., Li et al., 2010; Mulder et al., 2014). We instructed students to do the reflection individually, not in teams, as it has been suggested that reflection conducted in groups does not achieve as high learning results as reflection conducted individually (Rogers, 2001). In order to help students reflect on peer reviewing, we prompted them with questions, which included also consideration of what they had learnt based on the peer reviewing (see Appendix).

Twenty-six students gave their permission to analyse their written reflection for this study and these 26 writings represent the empirical data for this study. Whenever referring to the data excerpts, we will use labels R1 – R26. Finally, informed consent was obtained from the research participants and their privacy rights have been respected. As per the ethics protocol of the Finnish National Board of Ethics in research, this study did not require institutional review board approval.

Data Analysis

To analyse the data, we applied content analysis (see Hsieh and Shannon, 2005). We first coded the entire data set. Based on the coding process, we arrived at 10 categories and defined what each of the categories meant. In the next step, we combined existing categories to reduce the number of them as well as the size, especially of the large categories to better crystallise our findings. For example, we merged similar categories: 'Reflection on peer reviewing', 'Peer reviewing process', and 'Peer review evaluation' became the category 'Examining the peer reviewing practice'. The result of this effort was a reduction to 6 reflection categories (see Table 1). With reflection categories, we mean the six categories of different types of "content" we identified in these 26 student reflections on peer reviewing. Some of these categories arose as a result of the prompting questions (see Appendix), whereas others were unprompted. Each student's reflection contained between two and five out of the six reflection categories. Table 1

also shows in how many of the 26 student written reflections a specific reflection category was identified. In the final step, we also identified the patterns of reflection – how students structured their reflection papers in terms of the reflection categories. The term “patterns of reflection” is adopted from Toom et al. (2015). Finally, we note that all reflection categories identified arose from the empirical data and were not pre-defined.

Findings: How students reflect on peer reviewing and what they learn from the process

We identified six categories of reflection as summarized in Table 1. These categories provide important insights into how students reflect on peer review and what they learn from this process. We elaborate on these insights in what follows.

[INSERT TABLE 1 HERE]

Summarizing peer feedback. All reflections contained a summary of the peer reviews that the student’s team had received, or of the peer review the student had provided for another team, for example: *“A common thing that people commented was the price of the system.”* [R6]. This summary was often formulated in a form of what the students learned from peer reviews, such as about the use of relevant terminology and better understanding its meaning: *“I have learned how to separate customers and end-users. Our team must explain customers, who are they, what companies and why they are interested in our idea and what values we bring to them.”* [R4] This category makes visible how students understood the feedback they had received or had given and that they have actually read and engaged with the feedback.

Presenting ideas for Improvement. The question prompts we provided to students for the reflection only asked to reflect on improving their own product description *based on the peer review they provided for another team*, not based on the peer reviews they had received. Surprisingly, most reflections made visible how they intended to improve the idea also based on the received peer reviews. Ideas for improvement included how the product description in general should be written, and how to improve the understandability or readability of the idea, for example, through a different writing style or by being more concise when using terminology: *“From reading other people’s product descriptions, I learned that it is very important to write stuff clearly and in short, thus making it easier for the reader to understand. Unnecessary redundancy of information should be avoided to make the paper more readable.”* [R18] We also found that students utilized three different approaches when presenting their ideas for improvement. These three approaches indicate a different “depth” of the learning process the student engaged in when summarizing their ideas for improvement. First, some provided a description of ***what should be improved*** in their product description (this indicates they learned something about the content of their product idea/description), without describing how it would concretely be improved: *“In that case there is a need to rethink the monetization ways and what different premium features we can provide to product buyers, sellers and all the users in general.”* [R8]. Second, some students provided a ***fact-like description of how to improve*** their product description, for example, based on their discussion of the peer feedback in the course exercise: *“In the marketing exercise, we elaborated our idea and came up with a few great features that we should include in our final product to stand out of the competition (competitive edge). These include indoor user tracking and collaborative shopping list features”.* [R3] Third, some students provided a ***pondering-like description of how to improve*** the product description: *“Like it was said, we need to think more about our product difference to the competitors and how can we ensure that we must have some better features than in their application. [...] We also need to think more about the rewarding point and the way of how the companies can give rewards to their employees. I’m not sure that does our company pay the rewards or is the rewarding feature inside of the customer companies.”* [R10] Overall, this category makes visible what and how students learnt about the product or about how to improve the product idea.

Critically evaluating the received peer feedback. Nine students clearly engaged in a critical evaluation of the validity and value of a peer reviewer’s feedback, indicating whether they “accepted” or “rejected” the feedback. Some students expressed that they “accept” the peer feedback as valid but do not feel it helped the team improve their actual product description: *“For*

the most part the peer reviewers criticized the physical devices, the panic button functionality and the connectivity of these devices to the main system. They are all valid observations, but many of them are already noted by our team and are known problems.” [R5] Other examples showed that the student “accepted” the peer feedback as valid and what he/she learned concretely: “Also rewarding the consumers from discovery of new products with banner free time sounds like a great improvement to the gamification and crowd sourcing aspect.” [R19] In another reflection, a student “rejected” some of the received peer feedback: “In the peer evaluation, there was a suggestion about adding in the app different kind of workshops, yoga and cooking classes, seminars etc. There was already a plan for adding exhibitions and business networking events. Idea is that as long as it is a public event, it could be added in the application. For different kind of classes, though, I am not so sure if they are exactly intended for the application.” [R15] The engagement in this critical evaluation of the peer feedback received makes visible that an important learning process has taken place, namely that students are able to evaluate when the feedback received serves them and when it does not.

Critically considering own work. More than half of the reflections contained sections where the student provided additional explanations about their product ideas. Some students explained or justified why something in their team’s product description was written or done in a specific way, such as why it contained a lot of technical details: “At the time when our team returned the product plan, I was aware that our product description was too technical (even though it only scratched the surface) and perhaps it should have been kept simple for the sake of the exercise, but for me it felt naïve to just tell something about the product in a high level. This is because anyone could come up with an awesome product idea, but how are they going to convince anyone to invest and/or buy a product if they don’t have any clue how the product would work and is it even feasible! If someone came up to me with an idea and had no real-life knowledge about the basic implementation, I would take it as a joke and even feel that it’s a scam (e.g., case: solar roadways).” [R5] Other students provided in their reflection additional details about the product idea that justified their choices, for example, for the customer segments they chose to target, or what type of product they invented, in the light of the peer feedback they had received: “The focus of the project is wide when we have both segments: Vegan users and ethical users. If we drop ethical users away from the project, the user field will become too small.” [R7] This category makes visible some of the thinking and justification processes that were triggered by the received peer feedback, which required the students to view their own product description more critically.

Comparing own and others’ work. Three reflections contained sections where the student compared their own product description to another team’s product description, either pointing towards shortcomings they had noticed in their own team’s or in the other team’s product description. Students pointed to differences in how extensive the product descriptions were, and how clearly the team described which benefits the product would provide to all stakeholders, for example: “I learned through the peer reviews that our business description should contain more elaborative description of the product and how it would benefit the customer. This was noted in peer reviews and it was also something that I noticed when I compared our business plan to [Team A product description] and [Team B product description], which both had nice problem descriptions and how their product would answer to their customer needs.” [R22] Also this category makes visible an important part of the learning process, such as looking at the task at hand from different perspectives, that can be triggered through the peer reviewing and reflection activity.

Examining the peer reviewing practice. This category was identified in half of the reflections. Students examined the peer reviewing practice from several perspectives. Some reflected on **how the peer review process affected the student’s learning**: “When I wrote the peer review of the other team’s product description, I had at first difficulty to know what to write. Then I read the instructions about how to write the product description. I used more than one file that are available in Optima. When reading the instructions, I had to think everything one more time, and my opinion is that this raised my learning one level higher.” [R12] This indicates that students learned to make better use of the instructions provided by the teacher for writing the product description. Some students reflected on **why another student provided his/her peer review in the way they did**, for example, considering that some peer reviewers seemed to have been confused by the product description because the idea had evolved over time: “One possible reason is comparing it with previously presented (raw) idea in the exercise session.” [R16]. This indicates that the student learned that another student may have already some pre-conception about the product description, for example, from an earlier teaching session, that affects the

content of that student's peer review on the product description. One student also reflected on **why he/she did the peer review the way he/she did**, and the challenge of being supportive but still critical of the other team's idea: *"When I was reading the product description of the other team, I tried to be critical about it and see if the idea is viable and does each part support the whole concept. These situations can be hard from time to time because you sort of want to come across positive and not bash on the idea even if it is bad. I tried to read it from different stakeholders' point of view and if it is convincing or not."* [R20] That same student also reflected on the **value that his/her peer review provided for the other team**: *"I personally prefer doing peer reviews and reading them at this point because their results can still be put into actual use in learning and making modifications to the work, rather than just reading the results after the whole project and how did you do".* [R20] This indicates learning about the overall usefulness of providing and receiving peer feedback for improving the quality of the output the students had to produce in the course.

Finally, even though students reflected on peer review in different ways, we found patterns that were recurring in many of the reflection papers. We identified three common patterns of how students structured their reflection: 1) First presenting a summary of key feedback received in the peer review, and then presenting a critical evaluation of the received peer feedback (we found this pattern in 8 reflections), 2) First presenting a summary of key feedback received in the peer review, and then presenting a critical evaluation of their own work (we found this pattern in 10 reflections), and 3) First presenting a summary of key feedback received in the peer review, and then presenting ideas for improvement (we found this pattern in 11 reflections). These patterns demonstrate that reflection category "Summary of peer review" seems to represent an important step for the students in making visible how peer reviewing enhanced their learning.

Discussion

In this paper, we examined students' reflection upon peer reviewing. Our study makes two main contributions to the body of knowledge regarding the processes of reflection and peer reviewing, and about the entwinement of both in higher education teaching and learning. Our first contribution lies in making visible how students reflect on peer reviewing, and what they learn in this process. Our second contribution is in providing guidance to educators in higher education on how they can stimulate reflection on peer reviewing, thereby enhancing students' learning. We elaborate on these contributions in what follows.

How students reflect on peer reviewing and what they learn

The 6 categories of reflection we identified demonstrate that the process of reflecting on peer reviewing includes reflecting by summarizing peer feedback, presenting ideas for improvement, by critically evaluating the received peer feedback, by critically considering their own work, by comparing their own and other's work, and by examining the peer reviewing practice. Through these reflective processes, students' learning was enhanced in different ways, ranging from field-specific terminology to clarity and conciseness of their work, to learning *how to write a product description in general* and getting ideas for *how to improve their own specific product idea and product description*. Most of the reflection categories made visible that students found a new way of understanding or finding new, alternative ways to improve their work, which aligns with our understanding of reflection (Jarvis, 1987).

We observed that the reflection on peer reviewing can make visible to the educator that the student has at the very least read through the received peer feedback. Having read the peer feedback is the basic pre-condition for further reflection and learning from peer feedback. Reinholz (2016), too, has identified feedback reception as an important stage in learning through peer feedback. Thus, asking students to reflect on peer review serves as a prompt for learning to take place. The reflection category 'summarizing the peer feedback' illustrates that reflection on peer-reviewing serves this very specific purpose. Students' reflection upon peer review also made visible that when students consider how to improve their own ideas, they can do this in different ways, ranging from a simple 'this is what we will improve in our work', to considerations "how can we make improvements to our work", to a more critical process of consideration of 'what are different options for how to improve our work'. For educators, this is important to understand, as it can help them instruct their students to achieve a higher learning outcome by requiring students

to not only state what will be improved, but also how and what the potential different options are. We believe this can help educators address one challenge that has already been identified in previous research: that students have difficulties providing high levels of reflection in their learning journals (Cowan, 2014; Dymont and O'Connell, 2010).

Many students also critically evaluated the received peer feedback, and/or engaged in a critical evaluation of their own work. The finding that some students replied to the peers who had written the peer review is interesting from the standpoint that students knew that only the teacher will have access to their reflections. The reflection was not intended as a 'rebuttal' for the peer reviewers, but previous research has found some benefits in rebuttal writing, i.e., promoting critique and thorough thinking about the received feedback (Harland et al., 2017). Also, the comparison of the students' own work with that of their peers makes visible a critical evaluation. This builds on prior research suggesting that peer reviewing promotes the development of critical reflection skills (Liu and Carless, 2006), but it also extends it by showing that reflection on peer reviewing may further enhance the process of reflecting critically. Finally, the reflection category 'examining the peer reviewing practice' illustrated that students also learn by thinking about the peer reviewing task more deeply, for example about how the peer review process affected their own learning, and also what kind of value it provides to the student who received the feedback. This reflection category also showed that some students started to critically consider other students peer review practices, such as why the student had provided the peer review in the way it had been provided. This indicates that some students realized that there are different ways to approach a peer reviewing task.

The three common patterns of structuring the reflection identified in the data indicate a way of student thinking and structuring their thoughts. We found that our students, when starting to reflect, usually summarised general or specific peer review comment(s) before moving to reflect upon other aspects. Only in three of the 26 reflections, the students did not at all summarise the peer feedback they had received. This suggests that summarizing what other students had written acted as a trigger for further reflection. Similarly, Ryan (2013) argues that 'if a key issue/incident is not reported at the outset of the reflection, students lack focus and are unable to reconstruct their thinking/learning/professional strategies in any specific way' (p. 154).

Guidance for educators in higher education on how to stimulate reflection on peer reviewing

Overall, our findings have important implication for higher education pedagogy. They indicate that reflecting on the peer review on top of engaging in peer reviewing itself may stimulate students' uptake and use of feedback, and encourage further learning, including self-assessment. The reflection category of 'examination of peer review practice' provides a good example of how prompting students to reflect on the peer review process can start a thinking process that most likely would not have taken place without this prompt. Moreover, our study makes an important contribution to guiding educators in higher education to make the best possible use of reflection on peer review as an active learning activity. Here we want to emphasise that outside the field of educational sciences, neither university students, nor the university educators that instruct these students might have received much (if *any*) pedagogical training. Our findings can help these educators in designing a 'reflection on peer review' learning activity that is most supportive of achieving the learning goal they set.

In the context of peer reviewing, Reinholz (2016, p. 307) has emphasized that "students need guidance on what types of feedback they should provide to one another" to ensure that the feedback would be useful to the receiver of that feedback. Similarly, we argue that students need guidance on how to engage in the reflection on peer reviewing. The six categories of reflection we identified can be utilised by educators as examples to explain to students *how* they should reflect on the peer review. Should their goal be only to ensure that students actually read and make use of the peer feedback they received, prompting them to briefly summarise the received feedback and explain how they will improve their work based on the peer feedback would be useful. Should the goal be to make students reflect on their own work, educators could instruct students to focus in their reflections on explaining their reasoning for why the 'object' of peer reviewing, i.e., whatever it was that their peers gave feedback on, was the way it was. Similarly, educators can use these categories to instruct students in how *not* to reflect. They might, for example, indicate to the students that a simple summary of the feedback they had received from their peer reviewers is not sufficient to demonstrate what the students have learned from the peer

review, but that students should step beyond a pure summary of feedback and beyond shortly agreeing or disagreeing with the received feedback. For the learning of the student, it is beneficial to use the summary as a starting point for deeper reflection, for example reflection about the peer review process. Jonsson's (2013) review study on students' use of feedback in higher education argues that it is essential for students to learn how to use the feedback productively and formatively. We believe when students are guided well in how they should reflect on peer feedback, it supports them to learn how to better utilize the feedback.

While our findings are promising, it is important to note that we cannot claim with certainty that the learning indicated through most of the reflection categories – except the 'examining the peer reviewing practice' – was induced through the reflection on peer review, as it might have taken place already solely through the peer review activity. However, it is the reflection on peer review activity that made this learning visible and hence of particular value to educators. Especially in the context of group work, where the educator may only see whether and how a group overall has learned from peer feedback and improved their own work accordingly, having a tool to make visible individual student's learning is extremely valuable. Arguably, the reflection on peer reviewing activity is such a tool.

Conclusion

In this study, we developed the categorization of students' reflection on peer reviewing that may be a particularly beneficial pedagogical tool for educators in higher education who want to make use of reflection on peer review, and who want to guide their students to reflect more. As demonstrated in our study, in the process of reflecting on peer review, students were learning by summarizing peer feedback, presenting ideas for improvement, critically evaluating the received peer feedback, critically considering own work, comparing own and others' work and examining the peer reviewing practice. Arguably, this supports the idea that the reflection on peer review should be understood as an active learning activity as it engages students' to be active, autonomous, and responsible in and for their learning (Odom et al., 2009). It is a valuable learning activity for students to self-assess their reflective process, trigger further reflection on how to improve, and overall contributes to development of skills for life-long learning (see also Crisp, 2012; Careless et al., 2011).

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Appendix. Instructions and prompts for reflection on Peer-review 1 given to students

The main idea of the reflection is for you to pause and think about what you have learned both when making the peer review about another team's product description/business plan, and when receiving peer reviews about your team's product description/business plan from other persons.

In the reflection of how the peer review helped you improve your own plan, you have to describe at least:

- what you learned when reading that other team's product description, and how you would improve your own team's product description based on that.
- what you learned from the 3-4 peer reviews that other students made about your team's product description
- what you feel was missing from the peer reviews that your team's product description received from other students
- any other thoughts you have about the peer review process?

Table 1. Categories of reflection identified in students' reflection upon peer-review.

Reflection category	Explanation	Identified in how many reflections?
Summarizing peer feedback	Student provides a summary of (1) the peer reviews received, and/or (2) the peer review given.	26
Presenting ideas for improvement	Student describes how the peer review task and reflection supported the improvement of his/her work, written in the form of: (1) a description of <i>what</i> in the product description should be improved, but not how it will concretely be improved, and/or (2) a fact-like description of how the product description <i>will</i> be improved, and/or (3) a pondering-like description of how the product description <i>could</i> be improved (e.g., presenting different scenarios or options)	22
Critically evaluating the received peer feedback	Student replies to peer reviewers' comments in form of accepting or rejecting an idea brought up by peer reviewers.	9
Critically considering own work	Student provides additional explanation (1) for why something in their team's product description was written/done in a specific way and/or (2) additional details about the product idea (e.g., the product, monetization mechanism, etc.)	15
Comparing own and others' work	Student compares own product description to others' product description.	3
Examining the peer reviewing practice	Student provides views about the peer review process, such as (1) how the peer review process affected the student's learning, (2) why the student did his/her peer-review in the way he/she did it, (3) why another student had made their peer review the way he/she did, (4) the value of the peer review the student provided for another team	13