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Abstract

Feedback has been shown to substantially influence students' learning. However, not everything characterized as feedback is effective. Sustainable feedback places students in an active role in which they generate and use feedback from peers, self or others and aims at developing lifelong learning skills. First-year higher education students and tutors received sustainable feedback during their problem-based learning. To gain insights into how they perceived the sustainable feedback, students were probed via structured, open-ended questionnaires. While all participants positively valued the feedback, their personal characteristics, previous experience with feedback and concomitant perceptions appeared to have greatly influenced both tutors' and students' specific, individual behavior and responses. Conclusion is that sustainable feedback requires an evolving role of students and tutors with respect to sharing their perceptions of what feedback is, understanding the value and importance of feedback contributions of all participants, and developing the necessary skills to ask questions and give feedback.

Sustainable Feedback: Students' and Tutors' Perceptions

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Feedback has been shown to substantially influence students' learning. However, not everything characterized as feedback is effective. Sustainable feedback places students in an active role in which they generate and use feedback from peers, self or others and aims at developing lifelong learning skills. First-year higher education students and tutors received sustainable feedback during their problem-based learning. To gain insights into how they perceived the sustainable feedback, students were probed via structured, open-ended questionnaires. While all participants positively valued the feedback, their personal characteristics, previous experience with feedback and concomitant perceptions appeared to have greatly influenced both tutors' and students' specific, individual behavior and responses. Conclusion is that sustainable feedback requires an evolving role of students and tutors with respect to sharing their perceptions of what feedback is, understanding the value and importance of feedback contributions of all participants, and developing the necessary skills to ask questions and give feedback. Keywords: Sustainable Feedback, Perceptions, Individual Characteristics, Asking and Seeking, Self-Efficacy, Goal Orientation

During their studies in higher education students are preparing themselves for entering the labor market successfully after they graduate. It can be questioned what and how they should learn in order to become lifelong learners. Lifelong learning skills, such as monitoring and evaluating one's own learning process, should be developed while studying in higher education. From previous research it is known that feedback can have a significant effect on learning, however, not everything that is called feedback contributes to learning positively. In this study it investigated how feedback, directed at becoming lifelong learners is perceived by students and tutors.

Sustainable Feedback

While teachers in higher education spend much time and effort providing their students with feedback, the quality of this feedback can be improved (Arts, Jaspers, & Joosten-ten Brinke, 2015). One way to do this, according to Boud and Molloy (2013), is to have the feedback be sought and asked for by students instead of having teachers give the feedback without prior solicitation. This type of feedback is known as *sustainable feedback* (Carless, 2006). Hattie and Timperley (2007) define feedback as "information provided by an agent (e.g., teacher, peer, book, parent, self) regarding aspects of one's performance or understanding" (p. 81). This information should address the gap between what a person has mastered about a task, process, or their self-regulation and what is aimed or required to be mastered (Sadler, 1989). Feedback, as an educational approach or intervention has been found to have a considerable positive effect on learning, with Hattie (2013) reporting an overall effect size of 0.75. However, not everything that is characterized as feedback effectively leads to learning (Boud & Molloy, 2013). Traditionally, feedback is seen as a one-way activity initiated by the teacher (i.e., someone with more knowledgeable in a position of authority and power), who sends feedback messages to learners about the quality of their work with the objective of improving it. It can

be questioned whether this provided feedback of the teacher contributes most effectively to the needs of the students in higher education. For example, feedback that is given as a one-way activity might place students in a passive role and might prohibit them to decode and internalise the feedback message.

Society and the students' future working environment are in continuous, fast-paced change which requires corresponding learning outcomes (Nijhuis, Segers, & Gijselaers, 2005). This dynamic needs to be reflected in the intended learning outcomes of higher education such that students are equipped to become self-initiating seekers and users of information necessary for ongoing learning throughout their working lifetime (Boud, 2000). Shifting feedback from something initiated by teachers to sustainable feedback where students ask for and actively seek feedback from peers and teachers, addresses these needs of today's society including the need for lifelong learning (Nicol & MacFarlane, 2006). Sustainable feedback is defined by Carless (2013) as "active student participation in dialogic activities in which students generate and use feedback from peers, self or others as part of an ongoing process of developing capacities as autonomous self-regulating learners" (p. 113). Students who have developed self-regulation skills, such as self-monitoring, self-reflection and goal-setting, demonstrate higher levels of achievement and motivation (Clark, 2012; Schunk, 1996). Students should and need to learn to be independent of their teachers, independently using these skills in different settings and in cooperation with others (Boud, 2000). To this end, several researchers make a plea for students taking / being given a more active role in the feedback process (see for example Boud & Molloy, 2013; Sadler, 1998; Yorke, 2014). Only then, the effect of feedback on learning can be sustainable.

Sustainable feedback is a continuous process because students have to judge their own work according to learning objectives, subsequently ask for feedback on both process and product, and compare their own internal judgments thereof with the external judgments of others. Based on this, students can generate a plan to take further steps in the direction of the achieving learning objectives and implement this plan in subsequent tasks (Boud & Molloy, 2013). This continuous process of feed up ("Where am I going?"), feedback ("How am I going?") and feed forward ("Where to next?") has a short term effect on the improvement of the execution of subsequent tasks and a long term effect on development of self-regulation skills (Hattie & Timperley, 2007; Nicol & MacFarlane, 2006). These three process steps contribute to the sustainability of feedback by giving students the opportunity to use the feedback for example by producing improved work. Only then can both students and teachers know whether learning has occurred (Boud, 2000). To fully interpret the feedback generated during this process, students need to give meaning to the feedback received (e.g., through discussions). This can be done by assessment dialogues in which an individual student and the teacher or students as peers mutually discuss the feedback questions. In the assessment dialogue, feedback has a crucial role in clarifying both the learning intentions and the criteria for success (Carless, 2006; Ruiz-Primo, 2011). Explicit discussions of learning intentions and success criteria allows students to react directly to the information given in an assessment dialogue and make explicit the tacit assumptions of the teacher in terms of assessment (Ruiz-Primo, 2011).

Feedback Related to Individual Learner Characteristics

Feedback regulates and is regulated by how students *feel about themselves*, and influences what and *how they learn* (Dweck, 2000). An aspect of how students *feel about themselves* is known as self-efficacy: one's belief in one's capabilities to execute behavior required to achieve prospective outcomes (Bandura, 1977). Bandura indicated that self-efficacy influences the choices people make, the way they act, the amount of effort they exert, and their

persistence. Peoples' self-efficacy is, according Bandura, derived from four information sources. First, *mastery experience* is the students' interpretation and evaluation of the results obtained after completing a task. Based on this students judge and revise their competence, it is the most powerful information source providing people with information about their capabilities. Second, *vicarious experience* arises through the comparison of an individual student's abilities to the abilities of other students. If a student is as successful as or more successful thatn other students, then value can be added to the student's own performance. The third information source is the *verbal and social persuasion* used by others for providing information meant to encourage a person to develop certain capabilities. Finally, a student's *physiological and emotional state* is a source of information on the experienced difficulty of learning. Feedback can contribute to the explicit evaluation of these information sources, for example by directing feedback at the task to support a student's mastery experience (Fennolar, Román, & Cuestas, 2007) or exposing students to positive feedback and appropriate role models which uses both verbal persuasion and vicarious experience (Phan, 2010).

An aspect of *how students learn* is their goal orientation; that is, their approach to learning. Different goal orientations can be distinguished, based on the motivation of the student to approach a task. If the motivation is to obtain a grade or outperform others then this is seen as performance orientation. When the orientation is to become good or better at something, then this is seen as mastery orientation. In addition, some students are more oriented towards avoiding negative outcomes, while others wish to achieve a positive outcome. This leads to four types of goal orientation: mastery-avoidance, mastery-approach, performance-avoidance, and performance-approach (Elliot, 1999). A performance-avoidance orientation refers to avoiding a demonstration of a lack of competence relative to others; a performance-approach orientation refers to demonstrating competence relative to others. A mastery-approach orientation is directed at truly mastering an academic task; a mastery-avoidance orientation is directed at avoiding a misunderstanding of the task. From an educational point of view, a mastery orientation is favored because of the willingness to master learning objectives. To guide students into the adoption of a mastery orientation, one's *ability* to develop skills and gain knowledge should be stressed (Hoska, 1993). As Yeager and Dweck (2012) state based on previous research that if students can be redirected to see intellectual ability as something that can be developed over time, then they are more resilient when they encounter challenging learning situations. Therefore, feedback should be directed at the development of certain skills and the knowledge that should be obtained and the experience of increasing levels of competence.

The Influence of Feedback on Self-Efficacy and Goal Orientation

Feedback has been found to affect both self-efficacy and goal orientation. Liem, Lau and Nie (2008) found that different forms of feedback led to different effects on self-efficacy; students who received feedback only on the correctness of what they had done decreased more in their self-efficacy than students who received feedback aimed at their thinking about or behavior on what they had done. Fennolar et al. (2007) posit that feedback should be contextual in that it should be specific to the task and the student's skills to influence self-efficacy. Such task specific feedback also supports the student's mastery experience. An influence of feedback on goal orientation was found by Winne, Muis, and Jamieson-Noel (2003). They found that positive feedback led to a decrease in performance-avoidance, and that negative feedback led to a decrease in performance-approach orientation. Interestingly, this relationship might be bidirectional, namely that negative feedback might increase performance-avoidance, and positive might increase performance-approach.

While feedback influences self-efficacy and goal orientation, self-efficacy and goal orientation, in turn, influence how feedback is understood and processed (Narciss et al., 2014). For example, performance-avoidance oriented students might understand feedback as a prove of personal incompetence and might disregard and neglect the information processed. Evans (2013) stressed interest in investigating the relation between these concepts and the way feedback is used and interpreted because there is not a lot of empirical evidence yet about the influence of individual learner characteristics, such as self-efficacy and goal orientation on feedback processing.

When feedback is only directed at and viewed as transmission of information from teachers to students, the interaction of feedback messages with self-efficacy and goal orientation is disregarded (Nicol & MacFarlane, 2006). In other words, feedback should not only have been seen as a one-way cognitive information process about what is right or wrong and why, but should also be directed at students' beliefs and motivation. Feedback can interact with self-efficacy and goal orientations if it is directed at the evaluation of the four information sources (i.e., mastery experience, vicarious experience, verbal and social persuasion, physiological and emotional state) and on increasing levels of competence.

Perceptions

However, individual learner characteristics are not the only influence on the way feedback is understood. The way feedback is perceived and understood might differ between students. The perceptions of students with respect to feedback depend on their frame of reference (i.e., their conceptions of what feedback is or should be), which is built on their previous experiences (Gulikers, Bastiaens, & Kirschner, 2009). For example, if your conception of good feedback is that the teacher provides the correct answer after you have given a wrong answer, then your perception of epistemic feedback (i.e., to ask for explanation and/or clarification, Guasch, Espasa, Alvarez, & Kirschner, 2013) - asking the learner to think about why or how your answer could be different - will probably be perceived as "inappropriate" feedback and/or not helpful. Kember, Jenkins, and Ng (2003) found that students' perceptions of the quality of teaching (e.g., feedback received from teachers) are influenced by their conceptions of learning. This implies that to better understand why and how students act on or respond to feedback, it is important to take their conceptions of both feedback and learning into account. Or as Black and William (2009, p. 26) phrased it: "the teacher's agenda, the internal world of each student, and the intersubjective" are the relationships to investigate in order to better understand how feedback is used, acted on, or responded to.

To understand how students act, Adcroft (2011) studied feedback from a social-process perspective, stressing the central role of teachers and students as part of the feedback process. Adcroft found differences between students and teachers in the way they perceived the importance and usefulness of feedback. For example, students perceived written feedback as the most useful form of feedback critical to their learning experience. Their teachers, in contrast, valued written feedback significantly less. But it is not only the students' perceptions that are important. Research has shown that teachers' perceptions of teaching are reflected in the way they approached and carried out their teaching activities (Samuelowicz & Bain, 2001; Zhu, Valcke, & Schellens, 2010). Both students' and teachers' perceptions of teaching and learning are reflected in the way they approach and carry out teaching and learning. While investigating these perceptions, it is important to note that not all students perceive feedback in a similar way; they do not hold a homogenous view of what effective feedback is (Evans, 2013). The ultimate aim of investigating these perceptions is that it can be used to help students recognize feedback as feedback and learn how to use it and to act on it (Poulos & Mahony, 2008).

Research Question

This study addresses the following research question: How did both students and tutors perceive the use and value of sustainable feedback?

Method

Researchers' Context

This research was conducted within the context of higher education, more specifically the marketing domain. Together with my two co-authors we set up an intervention study among 62 students in higher education, based on a review of the literature in order to investigate the effect of sustainable feedback on self-efficacy and goal orientation. To gain more understanding on the perceptions of students and tutors regarding the sustainable feedback intervention we chose to conduct a qualitative research. Eight students and 4 tutors participated in the qualitative study (i.e., semi-structured interviews) of which the results are presented in this article. I (i.e., the first author of this article) work as an academic dean and am responsible for content and quality of courses in the marketing domain at a university of applied sciences in the Netherlands. Besides this role, I conducted this research as part of my PhD-project, my two co-authors supervised my PhD-project. Additional assistance was provided by two educational advisors of my university, they carried out the interviews. Another third-party transcribed verbatim the interviews. My research interest covers learning behavior, feedback, and assessment in higher education. This research was approved at the start by two independent reviewers and afterwards by the PhD Committee.

Participants

Participants in the intervention study were 62 first-year higher education students (33 males, 29 females; M_{age}=20.35; SD=2.60; range: 17-26 years, 46 Dutch, 15 Germans, 1 Italian) enrolled in the first year of a 4-year marketing Bachelor of Business Administration program. They participated in a PBL course that lasted for 8 weeks. Of these 62 participants, 8 students were selected at random and they participated voluntarily in the qualitative study presented in this article (4 males, 4 females; M_{age}=21.5; SD=2.60; range: 17-26 years, 5 Dutch, 2 German, 1 Italian) and represented all tutor groups. All 4 tutors (2 males, 2 females; M_{age}=48.5) guiding these groups participated in this qualitative study as well.

Context

Sustainable feedback was organized in the context of a first-year Dutch higher education course in the marketing domain. The academic year was divided into 4 periods of 8 weeks, and the sustainable feedback was organized in the third period of the first year. The marketing students worked together in problem-based learning (PBL) groups, solving marketing problems. The learning environment was composed of group work and individual work. The scheduled workload was 15 European Credits (EC; 1 EC=28.35 study hours), of which 3 EC involved PBL group work and 12 EC (4 courses of 3 EC each) were in subjects related to the practical problem. The PBL group work was assessed on a group level with the possibility to deviate on an individual level. The four subject-related courses were assessed with a written and/or oral exam and were all graded on an individual level.

Students received a bundle of blank feedback forms from their tutors, which they had to use for the homework assignment. As a homework assignment, the students were asked to

write down their individual learning-points (i.e., what they themselves would like to improve in terms of all aspects of their PBL work: from writing skills to chairing a meeting) based on their experience in PBL groups in the first two periods. Learning-points were formulated as a question and related to aspects of collaboration in PBL groups: so the learning-points resulted in feedback questions. During the next session, members of each group shared their feedback questions with their peers in their PBL-group and the tutor. Everyone was in possession of all the feedback questions of the group. The tutor stimulated and guided the students to seek feedback for their questions. All students wrote down their own judgments (evaluation) of their performance on the specific learning points (i.e., feedback questions). At the end of every meeting, the students had to write down the feedback they had sought and the feedback messages they had received. Halfway through 8-week period, students were given the opportunity to formulate one or two new feedback questions.

The sustainable feedback implementation was accompanied with quantitative measurements which were reported in another article (i.e., self-efficacy, goal orientation, learning behavior). To gain more understanding on the perception of students and tutors regarding the sustainable feedback we chose to conduct the qualitative research presented in this article.

Instruments

A structured, open-ended questionnaire for tutors (13 questions), and a structured open-ended questionnaire for students (22 questions) was set up by myself and my co-authors and used to gather qualitative information on perceptions of the sustainable feedback. Part of the questionnaire was four statements related to self-efficacy students were asked to agree or disagree with. These statements were derived from the four information sources of self-efficacy. The interview questions were composed of background questions and questions reflecting the theoretical framework on sustainable feedback and learner characteristics (see Table 1).

Examples of student questions were:

- You have shared your feedback questions with your peers/group members. What did you think of that? How did that make you feel?
- How did you experience having to ask for feedback yourself? Did you experience a feeling of being in control?
- In many situations (also in PBL-groups) the feedback is often unsolicited. Could you explain what is more useful from your point of view: asking for feedback yourself or receiving unsolicited feedback? Why?
- How do you assess the feedback you received from your peers? Why? How do you assess the feedback you received from your tutor? Why?

Examples of tutor questions were:

- Did the students manage to ask for and seek feedback from day 1?
- Please indicate the main differences in terms of your guidance compared to previous periods?
- Please give some examples of the way in which the students asked for and sought feedback?

Table 1.

Relation theoretical underpinning sustainable feedback with coding of the interview data (S = Student topics; T = Tutor topics)

Theoretical underpinning	Codebook
Boud and Molloy, 2013	
• Students judge their own work and are encouraged to articulate this judgement (self-evaluation)	• Self-evaluation (S)
• Students seek of solicit feedback on specific elements/steps (asking questions on certain aspects of their work).	• Asking for or receiving unsolicited feedback (S) Development in searching (T) Examples of searching (T)
• The tutor and peers provide performance information to the learner	• Interpretation of the feedback message (S)
• The learner, explicitly, compares the internal and external judgments and decide how to meaningfully interpret these messages	• Interpretation of the feedback message (S) Information for tutors (T) Personal development of students (T)
• The comparison of both judgments in relation to the standards are used to generate a plan for improved work	• Interpretation of the feedback message (S) Information for tutors (T) Personal development of students (T)
• The strategies are implemented in the subsequent participation in later tasks	• Interpretation of the feedback message (S)
Nicol and Macfarlane, 2006	
• Helps clarify what good performance is (goals, criteria, expected standards)	• Interpretation of the feedback message (S)
• Facilitates the development of self-assessment (reflection) in learning	• Self-evaluation (S)
• Delivers high quality information to students about their learning	• Quality of feedback: tutor and peers (S)
• Encourages teacher and peer dialogue around learning	• Part of the execution of the sustainable feedback
• Encourages positive motivational beliefs and self-esteem	• Aim of sustainable feedback
• Provides opportunities to close the gap between current and desired performance	• Interpretation of the feedback message (S)
• Provides information to teachers that can be used to help shape teaching	• Information for tutors (T) Difference sustainable feedback– as previous (T)
Hattie and Timperley, 2007	
• Feedback about the task	• Forms of feedback (S/T)
• Feedback about the processing of the task (powerful in terms of deep processing and mastery of the task)	• Forms of feedback (S/T)

Procedure

After completing the 8-week period, students were invited by me, via email to participate in the interview, and all tutors received an invitation to participate as well. The interviews were held from week 9 on. The interviews were carried out individually by the

institution's educational advisors (i.e., not being the researchers/authors) who were familiar with the PBL approach. The interviewers followed a standardized open-ended structure in which the questions were asked in a specific order and exactly as worded. The interviewers were allowed to ask supplementary questions for clarification or deepening of the answers. Students and tutors were invited to reflect on the previous 8-week period, keeping in mind the PBL group.

Data Analysis

The interviews lasted approximately 30 to 40 minutes. The interviews were digitally recorded and transcribed verbatim by a third party. We coded using NVIVO® 10. The final coding protocol was achieved through a combination of applying the theoretical framework underlying the project and abductive reasoning which moves back and forth between induction and deduction (Morgan, 2007). It is a pragmatic approach using existing theoretical explanations to make inferences about data, explaining noteworthy patterns by modifying the existing theory. The aim of abductive reasoning is to find the best explanation for what is happening (Sinkovics & Alfoldi, 2012). Thus, based on our theoretical framework, an initial coding protocol was composed (see Table 1 for an overview of the theoretical underpinning of the feedback related to the protocol). After the first coding session, we modified and combined codes in case of overlap (see Appendix 1 for the coding scheme). The hierarchical structure of the coding consisted of parent nodes (i.e., all references according to a theme) and child nodes (i.e., more specific and detailed references belonging to a parent node). We identified 6 themes related to students' perceptions, and we identified 5 themes related to tutor's perceptions.

Results

Students' Perceptions

The students' perceptions are presented thematically, namely: perceptions of formulating feedback questions; asking for or receiving unsolicited feedback; forms of feedback; quality of feedback; self-efficacy and goal orientation; future perspectives (see appendix 1 for an overview).

1. Perceptions of Formulating Feedback Questions

All students were able to define the concept of a feedback question. Definitions of a feedback question were all composed of elements such as the "specific point you are aware of, you are not good at, aspects you want to improve, and aspects you want others to give directions on how to improve." S1 indicated this as follows:

> So maybe you already know that you have problems, for example. My feedback question was: Am I too quiet, do I give enough input? So, I already knew that I wasn't that good, so what I wanted to hear was, what do other say about it?

The students formulated their two feedback questions in 5 to 10 minutes without much effort. They all said that they based the feedback questions on their experiences in previous study periods or in their working experiences. Sharing the feedback questions with peers and the tutor was perceived in a positive way. S6 pointed out:

> Some of them told me that that's not quite a weak point. If I use it in another way, it would be a quality, in a way that I could be more a leader of a group. And I quite liked that, I thought it was my weak point but it's not that. It depends on how I use it.

Half of the students reported that the tutor explicitly instructed them to seek feedback; the other half did not report any explicit instruction. They explained that, during the PBL group work, the tutor specifically took time out of the PBL session to talk about all feedback questions. In other words, the students explicitly had to pay attention to their own feedback questions and had to contribute to the feedback questions of others. S1 said:

> Yeah well, I just asked the question and then I listened to them to hear what they told me and then I tried to improve it for the next time.

Seven students pointed out that the tutor guided the feedback process and one reported a more nonchalant approach, it was not always taken seriously, in the PBL group, including the tutor.

2. Asking for and Seeking Feedback

This parent node consists of the child nodes (1) asking or receiving unsolicited feedback, (2) interpretation of the feedback message, and (3) self-evaluation.

2.1 Asking for or receiving unsolicited feedback. The students' perception of the usefulness of asking and searching for feedback compared to unsolicited feedback differed. Four preferred unsolicited feedback (S2, S3, S4, S5), arguing that if they had to ask for it themselves, it might be possible that they did not receive all possible feedback, there might be aspects overlooked. S2 said, "you may not be aware of a mistake you made. The only way to know this is when a group member tells you so."

S6 had an opposing opinion:

> Well, I think that the feedback questions that we had were really useful because not everyone wants to share [their] opinion or say what they think about that person. They are like, I don't care, we are just here in a group, that's it. But it's useful to help each other, and I think that the fact that we had to do it was more useful than just the feedback that you get once in a while, and maybe you don't really care about it.

It can be concluded that students differed in their preference for asking for feedback instead of unsolicited feedback. It seems that some students were afraid important aspects might be overlooked.

2.2 Interpretation of the feedback message. All students responded that they improved their performance based on the feedback they asked for and received from their peers and tutor. The students indicated their improvement using terms such as being more aware of and explicitly thinking about performance. S3 said: "well yes…if you are frequently working with this. So, in a sense, something is done, yes. And also, you are so intense occupied with this that it is almost naturally to act." S7 indicated: "Yes, through the feedback, I have noticed what to change. And yes, what points are not of importance for me of what aspects I little by little can improve." And S5 said:

> Well, at the beginning I had some negative remarks, but by half way, when we changed our feedback questions, it became all more positive. It was noticeable

that I adjusted something…I think I have tried to improve as much as possible. But I think if I had received more negative feedback I could have benefited from more of it.

2.3 Self-evaluation. Self-evaluation was part of the feedback process: students had to write down what feedback messages they received and, after 4 weeks, were asked if they wanted to choose one or two new feedback questions. During the interviews they demonstrated that they were all aware of and able to judge their progress. One student (S3) responded as follows: "yes, it is informative because, in a conscious way you think: What could be improved? And that is, so to say, conscious self-evaluation."

3. Forms of Feedback

Students were asked whether a specific form of feedback was recognized during the PBL group work. All recognized feedback directed at the feedback questions and, subsequently, recognized feedback on group dynamics (7: all except S5), the task (7: all except S1), the process (6: all except S2, S5), the self as a person (5: all except S2, S3, S4), and self-regulation (2: only S5, S6). S4 commented on feedback on the process: "yes, quit often. Then we talked about missing deadlines or about ways of communicating." This means that S4 indicated feedback on the process with examples such as talking about deadlines and how they communicated.

S7 indicated feedback on the person as follows: "yes, I received feedback on the person as well. They indicated that we, as Germans, are typical German: always having deadlines and firm about all the work that has to be done and finished by then."

4. Quality of the Feedback: Tutor and Peers

4.1 Feedback of the tutor. The statements about the quality of the feedback varied. Six students were positive about the quality of the tutor feedback. Four students indicated the feedback of the tutor as good and objective (S1, S2, S3, S6). S5 indicated: "the tutor's feedback was more useful than the peers' because the tutor dares to say more than my peers."

S7 responded in a similar way by indicating that the tutor has more experience and therefore the tutors' feedback has to be taken very seriously:

I take this very seriously, because the tutor knows. He has a lot more practical experience and therefore, if the tutor gives feedback to me, I consider that as really important.

Two students were less enthusiastic: S4 communicated the feedback to be good at first but diminished later on. S8 responded there was little feedback of the tutor, only "if necessary" feedback was added to the peers' feedback.

4.2 Feedback of the peers. The statements about the quality of the feedback of the peers varied as well. Four students found the quality of the feedback of the peers very useful, honest and constructive (S1, S3, S6, S7). S3 commented:

they notice what happens and how it happens. And not what they think happened. They observe in a very rational way, actually. They do not add emotions to it, which might influence the feedback in a negative way.

S8 was more critical and judged the feedback varying from bad to good. S2 indicated the feedback as constructive but often the same message as a previous meeting. S5 doubted the usefulness because of the overall positive messages. S4 was the most critical and valued the feedback of the peers as superficial.

5. Self-Efficacy and Goal Orientation

This parent node consisted of 7 child nodes. The first child nodes related to the four information sources of self-efficacy: mastery experience, vicarious experience, verbal and social persuasion, and physiological and emotional state. The students responded agreeing or disagreeing to the statements which were presented to them (see Table 2). Subsequently, the child nodes feelings of control; increasing levels of competence; and perception of confidence are presented. Of these child nodes is increasing levels of competence related to both self-efficacy and goal orientation.

Table 2.

Results of self-efficacy statements

Four information sources self-efficacy	Agree	Disagree
The feedback I received made it clear to me that I am getting better at… *(mastery experience)*	All students agreed (S2, S3, S4 more satisfied on one feedback question)	
The feedback I received made me realize that I am as good as or even better than my peers/group members *(vicarious experience)*	S1 agreed	7 students disagreed
The feedback I received was mainly meant as a persuasion/encouragement *(verbal and social persuasion)*	S1, S2, S3, S5, S6, S7 agreed S4 partly agreed	S8 disagreed
While working in the PBL-group, I often felt anxious *(physiological and emotional state)*		All students disagreed

5.1 Feelings of control. Being in control was interpreted in different ways. S6 responded: "not really, because you are like in the center and everyone can judge you based on your questions. So I wasn't actually in control because I cannot control their feedback." S7 had a different opinion:

> In my opinion, when I received feedback from my peers and my tutor, I could control …this week I improved this much or not, and those are the tips. How can I improve? So, I think, I can control whether I made improvements or not.

Overall, the majority of the students (7) responded that they liked and experienced being in control.

5.2 Increasing levels of competence. All students reported an increasing level of competence on their feedback questions. S1 added the comment:

> yes, I think so, yeah. So because I know what I had to improve, so I tried it and I'm going to try it further so.

5.3 Perception of confidence. All students unanimously reported that they felt confident to ask feedback questions in their PBL group

6. Future

The students were asked how and if they would continue this feedback approach. All of them responded positively. The following are some remarks: S1*:* "I will see in which group I am…I think sometimes I'm going to ask if I give enough input, or if I have to do more, even if it's not asked directly;" S3: "because I want to continue my growth;" S5: "because there are obviously more aspects to improve;" S6: "well, I think I'm going to formulate different questions because I want to improve other points and think of other issues that I might have."

Tutor Perceptions

The results of the tutor perceptions are also presented by theme: perceptions of formulating feedback questions; tutor work experience; asking for or receiving unsolicited feedback; forms of feedback; information for tutors (see appendix one for an overview).

1. Perception of Formulating Feedback Questions

All tutors defined a feedback question in terms of improvement and development. T2 formulated: "a feedback question is a question directed at aspects to develop and improve, and where you would like to receive help from others."

The tutors described the process of formulating a feedback question as rather difficult since they had to stimulate the students to formulate 'good' questions. The time spent by the students to provide the questions to the tutor differed from 15 minutes to 1 week since they were given the opportunity to formulate the feedback questions as a homework assignment. Overall, the tutors found that, because the students were not familiar with formulating feedback questions, some of them tended to formulate similar questions. The tutors had to stimulate them to make the questions more personal. T4 indicated:

> What struck me was that not all students understood the value and the importance of feedback, and the questions were quit similar, not really authentic or original…feedback was not already in the genes of the first-year student, so to say.

From the tutors' point of view, the students struggled in their attempt to ask for and seek feedback. It was helpful to make use of the forms on which the feedback questions were written and to take time out of the PBL sessions to discuss and talk about the feedback questions.

2. Asking for and Seeking Feedback

This parent node consists of two child nodes: (1) development in asking for and seeking feedback and (2) examples of asking for and seeking feedback.

2.1 Development in asking for and seeking feedback. The tutors reported different patterns in the development of asking for and seeking feedback. They attributed this, on the one hand, to the intrinsic motivation of students and, on the other hand, to the time needed to actually improve and develop. T1 said: "for some students, it is just an obligation, other students are really willing to learn something and enjoy the process…he asked very clear

questions, his development was obvious…" T3 said: "…my impression was: let's not be hard on each other…it was not an explicit part of their system yet."

2.2 Examples of asking for and seeking feedback. The explicit time taken out of the PBL sessions were the moments in which most students asked for and sought for feedback. One tutor (T1) discussed the German students' approach in improving their Dutch language skills: "their approach is characterized by asking for a lot of feedback, and not only during the 'scheduled' moments but also out of class."

Another tutor (T4) added a remark on the differences between males and females in their seriousness and approach of asking for feedback and indicated the males being youthful and not that serious.

3. Forms of Feedback

The tutors were asked whether a specific form of feedback was used by the students and by themselves. All tutors reported that all students gave feedback directed to the feedback questions of their peers. They said that group-dynamics feedback was hardly initiated by the students and that feedback on the process was discussed only when problems arose. They also reported that feedback on the person and on the task occurred on a regular basis, but that feedback on self-regulation did not occur. However, the tutors were critical on the quality of the feedback. One tutor (T3) formulated: "the funny part is that it is not directed to the quality of the work but to the quantity, or the intensity. Quantity seems to be a measure for students…"

The tutors themselves directed their feedback to the feedback question frequently. T2 formulated:

> Well, I provided something they have asked for. Of course, I also provided feedback on different aspects besides the feedback questions. It was pleasant to work with these questions. I was more consciously engaged in giving feedback; students did experience this in a similar way. It is a real question that is asked.

Group-dynamics feedback did not occur often. One tutor (T1) reported a delayed approach because he did not want to disturb the processes. Two tutors (T2, T3) were cautious and restrained with respect to feedback directed to a student. One tutor (T1) stated that this form should be used more often and another (T4) said that it should be strict and corrective. Feedback on the process was often given and was considered to be important by all tutors. One tutor (T1) directed feedback on self-regulation on a regular basis, the other tutors reported less use of this specific form of feedback. Feedback on the task seemed more process related. T2 indicated: "I am more concerned with the process, I think."

It has to be noted that other lecturers, not the tutors, were in charge of the assessment of the tasks.

4. Information for Tutors

The theme information for tutors is related to the students specific information they gained from this sustainable feedback approach. The parent node information for tutors consists of two child nodes: (1) personal development and (2) difference sustainable feedback vs. feedback as previous.

4.1 Personal development of students. All tutors indicated the personal development of students, such as the development of leadership, effective communication, and less dominant behaviors. T3 commented:

What strikes me is that positive feedback, from my point of view, is stronger than corrective feedback. Positive feedback contributes to the development of students and especially to students' self-esteem, enthusiasm and happiness…you could say that a time period of 8 to 9 weeks is relatively short, but it is good if it happens.

4.2 Difference sustainable feedback versus feedback as previous. All tutors appreciated working with feedback questions as was done during this 8-week period. Arguments for preferring this approach compared to the usual way of working were:T4: "from week one on, it is clear which aspects a student wants to improve, instead of hearing this halfway through the period during midterm evaluations." T2 indicated: "feedback is more tailored to students' needs."

Overall, the tutors stated that they would like to continue this approach in upcoming periods.

Conclusion and Discussion

The research question in this study was: How did both students and tutors perceive the use and value of sustainable feedback? The conclusions are presented and discussed in accordance with the themes of the hierarchical protocol distracted from the interviews, namely: student and tutor perceptions of sustainable feedback and their underlying codes, followed by the relation between sustainable feedback and self-efficacy and goal orientation.

Perceptions of Sustainable Feedback

Formulating questions. Students and tutors differed in their perception of the ease in which the feedback questions were formulated. The tutors observed students struggling, while the students indicated that the feedback questions were quickly thought of and written down. This difference can be explained by the different conceptions of what a "good feedback questions" is between students and tutors. In other words, these different conceptions made students and tutors perceive the quality of the feedback questions in different ways. Tutors' perceptions led to their conclusion that not all students wanted to spend a lot of effort formulating a feedback question. The tutors perceived the quality of the feedback questions as not high enough, and from the tutor's perspective the students were easily satisfied. This aspect needs attention as formulating feedback questions is the starting point for the assessment dialogue between teachers and students. The assessment dialogue is important to enhance learning and contributes to receiving feedback but may be even more important to have students *produce* feedback (Nicol, 2010). Producing feedback is an important skill for students for learning how to judge both the quality of the work produced by their peers and of their own work (Sadler, 2010). Clarification of the criteria of a 'good' feedback questions is necessary, Carless (2006) found that tutor and student perceptions on assessment criteria differed a lot and that tutors need to do more to enhance students' understanding of criteria. Explicit discussion of these criteria should be part of the sustainable feedback process. Another clarification of the different judgment of the quality of the feedback question might be that some students are reluctant to formulate a feedback question that could show their perceived incompetence (VandeWalle, 2003). Some students might have thus chosen to formulate a relatively 'harmless' feedback question.

Although students and tutors held different opinions on the quality of the feedback questions both students and tutors defined the concept 'feedback question' in a similar way, everyone used words such as: development, improvement.

Asking for and seeking feedback. The process of asking for and seeking feedback did not occur automatically. Tutors had to take time out of the PBL sessions and let the students explicitly talk about the feedback questions. This could be indicated as a more or less "technical/scheduled" approach, instead of a more integrated natural approach. An explanation for this might be that both students and tutors were not experienced in asking for and seeking feedback. With respect to their preferred unsolicited feedback students remained close to their experience of receiving feedback throughout their whole educational career. They argued that essential points otherwise might be overlooked. In terms of interpretation of the feedback messages, they were all positive and concluded that they improved on the learning points they formulated as a feedback question. It might be the case that some students overestimated their improvement and subsequent performance (Narciss et al., 2014). Gonida and Leondari (2011) found that overestimators reported higher mastery and performance orientations. In other words, the effect of overestimation might be biased perceptions of self-efficacy and goal orientation. *Accurate* performance/competence beliefs are favorable: in terms of self-efficacy it is necessary that strong self-efficacy beliefs should be accompanied by actual increasing knowledge and skills in order to be able to gain mastery experience in upcoming tasks. Overestimation might hinder mastery experience. In terms of mastery orientations, it is necessary to be aware of one's accurate levels of already achieved knowledge and skills to know if and how the process of mastering a task is proceeding. The tutors indicated differences in student development in the process of asking for and seeking feedback. They related these differences, among other things, to differences in motivation of the students. Learner characteristics such as motivation have been found to influence learning in general and might be critical for feedback processing (Narciss et al., 2014).

Forms of feedback. All students and tutors based their feedback on the feedback questions. Noteworthy is that students reported feedback on group-dynamics frequently, whereas the tutors reported that this form was seldom initiated by the students themselves or by the tutors. This could be because group-dynamics might have been observed in different ways. This conclusion is supported by the statement of tutors that process feedback initiated by students only occurred in case of trouble, whereas students stated that process feedback often was used. It might be the case that the two groups used *group-dynamics* feedback and *process* feedback both interchangeably and differently. Feedback directed at a person occurred often according to the students, the tutors provided a more nuanced view of it being cautious and restrained. Feedback on the task was recognized by 7 of the 8 students, whereas tutors seemed to view task feedback as a form of process feedback. An explanation might be that other teachers, instead of the tutors, assessed and graded the PBL tasks. The tutors were more focused on the process of executing the task instead of the content of the task. Self-regulation was barely recognized by students and tutors. Although feedback on process and on self-regulation have a higher learning effect than feedback on task (Hattie & Timperley, 2007), it seems difficult to distinguish between the different kinds of feedback. Improvement in feedback might be possible if teachers know and understand the differences between the different kinds of feedback and are aware of the effect of different kinds of feedback (Arts et al., 2015). Overall, it can be concluded that feedback on the feedback question and feedback on the process/group-dynamics were the most common forms during the PBL sessions.

Quality of the feedback and information for tutors. Student perceptions of the quality of feedback of peers and tutors were generally positive. Noteworthy is the appreciation of feedback of the tutor compared to feedback of peers. Students argued that they prefer the feedback of the tutor because of the expertise tutors possess and the ability of tutors to express themselves more and more explicit. These findings are in line with the conclusion of Hanrahan and Isaacs (2001) that students doubt the knowledge of peers. Students preferring teacher feedback to peer feedback was also found by Guasch, Espasa, Alvarez, and Kirschner (2013).

However, Avery (2014) found that MBA students were able to appreciate the role of peers as a source of mastery knowledge, this might imply that opposite to the less experienced undergraduate students of our study these MBA students could rely on their educational and working experience to value peer feedback. To help students to learn to value the feedback of peers, Nicol (2006) suggested that in an initial phase teachers could comment on the peer feedback, instead of solely on the quality of the work. This might help students to become less dependent of their teacher providing feedback. Working with the feedback questions provided tutors with information about individual, tailored, learning points of students. They were positive on the progress, but also indicated the relative short period of 8 weeks available for improvement.

The relation between Sustainable Feedback, Self-Efficacy, and Goal Orientation

The students evaluated the four statements on self-efficacy in a positive way, they perceived feelings of confidence, and experienced increasing levels of competence. In other words, the sustainable feedback provided them with perceived positive experiences. However, what and how students learn is regulated not only by feedback, but also by how they feel about themselves (Dweck, 2000). These feelings are reflected in personal characteristics such as self-efficacy and goal orientations. Even though all participants positively valued sustainable feedback, personal characteristics, previous experience and concomitant perceptions directed both tutors and students to specific, individual behavior and responses. Three cases are discussed:

First, students responded positively to the self-efficacy statements and perceived increasing competence. The perception of increasing competence is an important information source students evaluate and enhance their feelings of self-efficacy. This experience of success (i.e., mastery experience) provides students with information about their capabilities based on evaluation and reflection on the results obtained. However, it might be that their perception of not receiving all the possible and necessary feedback due to asking and seeking feedback by themselves influenced low self-efficacious students' mastery experience and therewith their increase of perceived self-efficacy could be restricted. A lack of mastery experience limits self-efficacy enhancement (Narciss et al., 2014).

Second, individual characteristics influenced the preference of asking for and seeking feedback of a tutor instead of a peer. On the one hand Ng and Earl (2008) found a positive relation between student mastery orientation and feedback seeking (i.e., sources of feedback were family-related, external benchmarking, education, own opinions). On the other hand, mastery oriented students might feel that feedback of peers puts the emphasis on performance and the comparison thereof instead of emphasizing the mastery of something. If someone equal to them (i.e., a peer) indicates that their performance is not good enough this might trigger an increase of performance-avoidance. In other words, this perception of receiving peer feedback might trigger goal switching. Goal switching could occur in all possible directions: a switch of an approach goal into an avoidance goal or vice versa, but also a switch of a mastery into a performance goal or vice versa (Senko & Harackiewicz, 2005). In two separate studies they found goal switch between performance goals after exam feedback, and they found a decline in mastery striving after receiving negative feedback. They argued that competence feedback might influence competence perception and therefore influences goal orientation. In our study the perception of comparison between peers (i.e., equal roles) might direct them to a performance orientation.

Third, the way sustainable feedback was executed and guided by tutors might have influenced the perceptions of students, and thereby the way they acted on it. The tutors tended to approach the sustainable feedback in a rather 'technical' way. They explicitly took time out

of class to discuss the feedback questions instead of integrating it during the PBL sessions; this might have restricted the continuous (i.e., sustainable) process of feedback seeking by students (Carless, 2006). As a consequence, the assessment dialogues necessary to give meaning to the feedback did not always occur. These dialogues contribute to the clarification of the learning intentions and to share criteria for success (Carless, 2006; Ruiz-Primo, 2011). Students might have perceived sustainable feedback more as an ad hoc task. This might have inhibited the students to be actively involved as much as possible in order to stimulate the development of their self-regulation. Particularly the evolving role of students as active participants in sustainable feedback practices has been found to be crucial (Carless, Salter, Yang, & Lam, 2011). As a consequence of the tutors' approach and the way students perceived it, students might have benefitted less of the sustainable feedback.

Overall, it can be concluded that implementing a feedback design in which students and tutors have to work together in asking for and seeking feedback is a complex process. Both students and tutors have to develop a mindset to see feedback as an integrative element of teaching and learning, and have to be motivated to learn, see, and acknowledge what is needed to improve learning (Evans, 2013). Sustainable feedback within PBL requires an evolving role of students and tutors; sharing perceptions of what feedback is, understanding the importance of the valuable feedback contribution of all participants (i.e., students, peers, and tutors), and developing skills to ask questions and to give feedback messages (Sluijsmans, Moerkerk, Van Merriënboer, & Dochy, 2001)

Practical and Methodological Implications and Limitations

Our study contributed to the extensive feedback research by adding individual perceptions of students and tutors of sustainable feedback. Knowledge of these different perceptions and responses to sustainable feedback can be used to personalize feedback in order to be more effective. Learner's characteristics such as feelings of self-efficacy and goal orientations influence the way feedback is processed (Narciss et al., 2014). This implies that educators have to take these characteristics into account. Gaining mastery experience to enhance self-efficacy is not perceived in a similar way by all students, implying that tutors should be trained in observing students' behavior and adjust their guidance to these characteristics. Future research has to address research questions on how to personalize feedback based on learner characteristics.

Furthermore, sustainable feedback has to be an integrated part of the educational process, and not only be restricted to isolated / scheduled moments during a course or a class hour (Sadler, 2010). This implies that teachers should explicitly train their students in using sustainable feedback, how to play an active role, how to ask questions, and probably most important to stress and explain the added value and long-term effects (i.e., becoming an autonomous self-regulated learner) of sustainable feedback (Carless et al., 2011).

Our study was conducted in a PBL context within a marketing program; this might limit the transfer of the results to other learning environments and study programs because of the specific features of our context. The length of the sustainable feedback period was limited due to the real life scheduled period. A longitudinal continuation of this approach is necessary to investigate the long-term effects and to replicate this approach across a range of contexts (Evans, 2013).

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Appendix

Codebook Students
S1 Perception of formulating fb questions
S2 Asking for and seeking feedback
    Asking or receiving feedback
    Interpretation of the feedback message
    Self-evaluation
S3 Forms of feedback
    Group dynamic
    On the FB question
    Process
    Self as a person
    Self-regulation
    Task
S4 Quality of the feedback
    Peers
    Tutor
S5 Self-efficacy and goal orientation
    Emotional state
    Feelings of control
    Increasing level of competence
    Mastery experience
    Perception of confidence
    Verbal persuasion
    Vicarious experience
S6 Future perspectives

Codebook Tutors
T1 Perception of formulating fb questions
T2 Asking for and seeking feedback
    Development in searching
    Examples of searching

T3 Forms of feedback (student and tutor)
    Group dynamic
    On the FB question
    Process
    Self as a person
    Self-regulation
    Task
T4 Information for tutors
    Personal development
    Difference normal instruction

Note. S1-6 and T1-4 are parent nodes.

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