

Developing Student Feedback Literacy Through Exemplars,

Peer Feedback and Self-evaluation

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Abstract

Feedback is the key element of formative assessment, and feedback is only feedback when students manage to act upon it (Carless & Boud, 2018). Students can only act upon feedback when they appreciate and understand feedback, are capable of making evaluative judgments and manage their affect (Carless & Boud, 2018). Many suggestions are made on how to stimulate these capabilities, known as student feedback literacy, through educational activities. Nevertheless, there is no evidence that these activities actually develop student feedback literacy. In this study several of those activities, including using exemplars (Carless, 2020), providing and receiving peer feedback (Carless & Boud, 2018) and self-evaluation (Malecka et al., 2020) are combined in an intervention. With the use of semi-structured interviews pre- and post-intervention the effect of this intervention on the development of student feedback literacy is measured. All students showed progress in one or more features of student feedback literacy after the intervention, most of them in the appreciation and judgment feature. No one showed progress in all four features of student feedback literacy. Activities to stimulate student feedback literacy should be core elements of the curriculum, and therefore this study should be prolonged to see the effect after several interventions.

Keywords: student feedback literacy, intervention, exemplars, peer feedback, self-evaluation

Developing Student Feedback Literacy Through Exemplars, Peer feedback and Self-evaluation.

During the last two decades, a shift in education can be noticed away from summative assessment towards more formative ways of assessment (Baartman & Gulikers, 2017). Black and Wiliam (1998) reported, as one of the first, more attention for interactions between assessment and classroom learning (formative assessment) in research, than for using assessment to judge students' learning (summative assessment). They defined formative assessment as a process of activities undertaken by teachers and/or their students that provide information, used as feedback, to change their teaching or learning activities. Havnes et al. (2012) elaborated on the definition of Black and Wiliam (1998) by stating that formative assessment monitors the student in achieving a desired goal, trying to close the gap between where the student is now and where he has to go. Formative assessment activities such as sharing assessment criteria with students, setting learning goals, receiving and providing feedback and evaluating own learning through self and peer assessment can be used to show students where to go, how they are doing and where to go next (Hattie & Timperley, 2007, Black & William, 2009, Havnes et al., 2012).

Feedback is the key component in formative assessment with the strongest influence on learning (Black & Wiliam, 1998; Crooks, 1988; Hattie, 2009; Havnes et al., 2012). So, to implement or increase formative assessment practices, it is important to improve feedback processes. Prior research focused on improving the nature of feedback provided by the

teacher (Dunworth & Sanchez, 2016; Hattie & Timperley, 2007) and the modes of delivery of feedback (Bennet et al., 2017; Mahoney et al., 2019). Despite all this knowledge of feedback, students still report that feedback provided by the teacher is insufficient, too late or too early, hard to understand, and sometimes demotivating (Evans, 2013; Winstone et al., 2017). Teachers report frustration when students appear to show low engagement with the feedback and do not use it to improve future work (Price et al., 2011). Havnes et al. (2012) claim that in most research on feedback a critical element is missing: the role of the student. In recent literature, researchers elaborate on this view, and focus more on students' actions in response to feedback (Boud & Molloy, 2013; Carless, 2015; Carless & Boud, 2018). Building on this line of thinking, Carless and Boud (2018) conceptualized feedback from a student perspective as a process in which students try to understand the comments from several sources, and use this information to improve future performance or learning strategies. This student-centered perspective emphasizes the need for students' active involvement in feedback processes

The capability of students to take a role in their feedback processes is called student feedback literacy (Sutton, 2012), and is defined as the understandings, capacities and dispositions needed to process and use feedback for the improvement of learning (Carless & Boud, 2018).

Student feedback literacy model of Carless and Boud (2018)

Carless and Boud (2018) propose three interrelated features of student feedback

literacy, which in combination maximize the potential for students to take action (see

Figure 1).

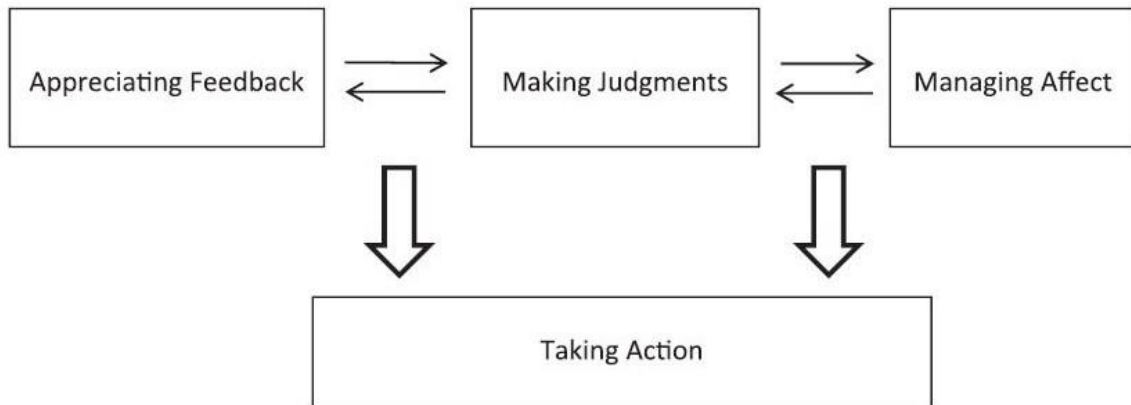


Figure 1. Features of student feedback literacy (Carless & Boud, 2018)

The first feature of student feedback literacy is appreciating feedback. When students appreciate feedback, they recognize the value of feedback and understand their own active role in the feedback process (Sadler, 2010). To elaborate on this, appreciating feedback comes with understanding the role of feedback in improving work, and recognizing that feedback comes in different forms and from different sources (Carless & Boud, 2018). The second feature of student feedback literacy concerns making evaluative judgments. To benefit the most from feedback processes, students need to develop evaluative judgment, which is the capability to make decisions about the quality of their own work and that of others (Tai et al. 2018). The third feature refers to feelings, emotions and attitudes concerned with feedback. Students often respond defensively to feedback, especially when feedback is critical or grades are low (Robinson et al. 2013). According to Carless and Boud (2018), feedback literate

students remain emotionally balanced and do not show defensive behavior when receiving critical feedback. As Figure 1 shows, when these three features are developed by students, it increases the chance that students take action based on the feedback provided. Taking action shows when students draw conclusions from several feedback experiences to improve their future work, and when they develop a set of strategies for responding to feedback. Carless and Boud (2018) concluded with a call for action: to design educational practices which might develop student feedback literacy.

Developing student feedback literacy

Several researchers based their line of work on the student feedback literacy model of Carless and Boud (2018) and came up with suggestions on how to stimulate student feedback literacy. Three of those will be discussed here: the use of exemplars (Carless, 2020), peer feedback (Carless & Boud, 2018) and revising earlier work and self-evaluation (Malecka et al., 2020).

Exemplars. Carless (2020) suggests the use of exemplars to induce student feedback literacy. Exemplars are hand-picked examples of student work, used to illustrate dimensions of quality and to clarify assessment criteria (Carless & Chan, 2017). To stimulate feedback literacy, according to Carless (2020), it is important that students first produce a draft of their work and then expose them to exemplars, so the exemplars can function as substitutes for teacher feedback. Exemplars develop student feedback

literacy, because they enable students to appreciate quality work, enhance their capacities to make sound evaluative judgments, and draw appropriate conclusions for actions to improve their own work (Carless, 2020). Other research on exemplars (Carless & Chan, 2017; Smyth & Carless, 2020; To & Liu, 2018) suggests that teacher and student dialogues about the exemplars are important to clarify key elements of quality work and maximize students' learning gain. Therefore, Carless (2020), recommends to include both peer dialogue and teacher centered dialogues to guide opinions about features, strengths and limitations of the exemplars, and to fend off misconceptions.

Peer feedback. Carless and Boud (2018) state that composing and receiving peer feedback facilitates the development of student feedback literacy. Providing peer feedback is often more beneficial than receiving it, because of its potential to effectively trigger critical thinking, interpretation of assessment criteria, and making judgements (Nicol et al., 2014). Such peer feedback processes can foster student feedback literacy, because students are actively engaged in the feedback processes and need to make evaluative judgments about the work of others and compare them with their own work. Students generate, process, and act on feedback through peer feedback and it opens the potential of a feedback dialogue (Malecka et al., 2020). In addition, peer input can enhance the social-relational aspects of feedback and reduce the power differences and negative emotional responses that can arise from teacher feedback (Yang & Carless, 2013).

Revising earlier work and Self-evaluation. Other suggestions to develop student

feedback literacy are made by Malecka et al. (2020) like revising earlier work, and self-evaluation. Students are involved in processing, responding, and acting on feedback through revising their earlier work, showing clear similarities with the acting feature of student feedback literacy. Self-evaluation can foster the development of feedback literacy, as students use inputs to level their own judgments or develop awareness of how they can re-consider their own work in response to feedback (Malecka et al., 2020). Furthermore, Malecka et al. (2020) suggests, to stimulate self-evaluation, the use of an interactive coversheet, which is a feedback request form on the cover of the assignment. An interactive coversheet encourages students to reflect on their work prior to submission and create engagement with the feedback they want to receive, and so promote self-evaluation and student feedback literacy (Malecka et al., 2020).

In addition to the above specific activities to encourage student feedback literacy, there are two more general considerations to take into account when developing an intervention. First, Carless and Boud (2018) state that all activities to support the development of student feedback literacy should be core elements of the curriculum to realize their potential. Second, Winstone et al. (2019) stress the importance of a holistic approach when an intervention should stimulate multiple features of one concept. Winstone et al. (2019) developed a Developing Engagement with Feedback Toolkit (DEFT), which combines several resources with a workshop. The DEFT is used as an intervention to improve engagement with feedback, and this intervention should consider

both the barriers to engagement and the recipient's skills required to make use of feedback (Winstone et al., 2019). The latter point shows similarities with feedback literacy, and therefore parts of the workshops, developed for the DEFT, are used as inspiration for this study. Those parts of the DEFT workshops are a group discussion to stimulate appreciation and understanding of feedback and an activity to benefit from emotions caused by feedback. Winstone et al. (2019) found that the DEFT might stimulate the feedback literacy of the student.

In summary, the main features of student feedback literacy are known and various educational activities are proposed to improve student feedback literacy. Nevertheless, research to date has not yet determined if these educational activities can actually develop student feedback literacy. Therefore, this study attempts to answer the following research question: To what extent can an intervention, focusing on exemplars, peer feedback, revising earlier work and self-evaluation, stimulate student feedback literacy?

Method

Research design

A qualitative intervention study (Sandelowski, 1996) was conducted to investigate to what extent the intervention can stimulate the feedback literacy of students. In order to gain insight into student's appreciation, evaluative judgments, feelings and use of feedback before and after the intervention, semi structured interviews were used. This qualitative approach most suited the research question, because it generates rigorous, and detailed

information about this complex topic (Mattock & McIntyre, 2016). With the intervention, students feedback literacy was trained by means of studying exemplars, providing and receiving peer feedback, revising earlier work and self- evaluation.

Participants

The study was performed with students from the first year of a vocational education school for laboratory technicians, from February 2021 till June 2021. Since September 2020, the school adapted its curriculum in order to monitor the theoretical, practical and behavioral development of the students through formative assessment. As part of the curriculum, students participate in workshops to develop their metacognitive strategies, such as planning, reflecting, setting goals and providing feedback. The intervention in this study about student feedback literacy, consisted of four of these workshops and is therefore part of the curriculum.

Eight students participated in this study and were preselected by their teachers on prior achievement, informed about the study and then asked to participate. The preselection method was conducted to include students with different states of prior achievement, to have an as wide as possible population within this small group of students (see Table 1). Before the pre-intervention interview students gave their consent, and were told that they could withdraw from the study at any moment without giving reason. One student participated in the pre-intervention interview, but was unable to participate in the intervention for personal reasons, which led to her withdrawal from the study. This

reduced the number of participants to seven. In Table 1 all necessary information about the students is presented, including their prior achievement.

Table 1

Participant's characteristics.

Pseudonym	Age	Achievement		
		Theoretical	Practical	Behavioral
Anton	17	I	S	S
Bert	17	I	I	S
Cynthia	17	I	S	S
Dean	17	I	I	I
Eva	17	S	S	S
Flora	17	S	S	S
Gerda	16	S	S	S

Note. To ensure the anonymity of the students, their real names are replaced with pseudonyms. Gender is also presented with this pseudonym. I = insufficient; S = sufficient.

Instruments

Laboratory report. To apply any lessons learned from the exemplars and peer feedback, students wrote and rewrote a laboratory report. During their studies, it was the second time students wrote such a report according to a provided format (see Appendix A1). All assessment criteria were insightful through a development rubric, presented in Appendix A2. This rubric was used by teachers to monitor students' progress, and also used to provide feedback. Within this study the students learn to use the rubric for peer feedback and self-evaluation. First, students conducted practical work in the laboratory and then wrote a laboratory report, which included results, calculations, a graph and a

conclusion. Students need to learn how to process, assess and interpret results through practice, so the laboratory report provides lots of opportunity to receive feedback and act on it. Learning to write such a laboratory report is very important, because reporting results is one of the main tasks of a technician.

Semi-structured interviews. Semi-structured interviews were the chosen method of data collection, the main advantage of which is that it allows the interviewer to improvise follow-up questions based on the participant's answers (Kelly et al., 2010). Informed by the literature, a topic guide set the broad design of the interviews, ensuring that the research objectives were met while allowing the students to describe their experiences (Åstedt-Kurki & Heikkinen, 1994; Krauss et al., 2009; Cridland et al., 2015; Kallio et al., 2016). Two different interview guides were used, one for the pre-intervention interviews (see Appendix B1) and one for the post-intervention interviews (see Appendix B2). Both interview guides were based on the four features of student feedback literacy according to Carless and Boud (2018). The differences were mainly caused by the purpose of the two interviews. The pre-intervention interview was used to get insights of the previous experiences with feedback, while the post-intervention interview focused on students' experiences during the intervention. Therefore, the questions pre-intervention were more general formulated, and the questions post-intervention were more specific on the intervention (see Table 2). The interview questions were first discussed with teachers and fellow researchers, to see if the

questions were understandable for the participants, only question one thing and were related to the topic (Galletta, 2013; Kallio et al., 2016). Subsequently, a pilot test, was administered to three students, not included in this study. This pilot test provided insight if the questions really elicited the responses that were intended, i.e., the validity of the questions (Galletta, 2013; Kallio et al., 2016).

Table 2

Examples of questions per topic for pre- and post-intervention interviews

Topic	Interview question	
	Pre-intervention	Post-intervention
Appreciation	What is the value of feedback to you?	Which way / method of feedback do you appreciate the most? So, what was most helpful to you? And why?
Affect	You have already regularly received feedback on your work. How do you usually respond to feedback? What does it do with you?	How did you experience the feedback from the teacher? What did it do with you?
Judgement	When you made a product, do you know whether you made it right or not?	When submitting the laboratory report, did you know whether you made it right or not?
Act	How did the feedback helped you to improve your work?	Can you think of a method for yourself that will help you get the most out of the feedback process, so that your products reach the right level more quickly?

Intervention

The intervention was designed to stimulate the appreciation of feedback, to make judgments, to manage affect, and to take action upon feedback, in other words the four features of student feedback literacy (Carless & Boud, 2018). The intervention consisted of four workshops (see Figure 2) of one hour, and an activity to stimulate the students to take action, through writing and rewriting the laboratory report. The first workshop was designed to support students' appreciation and understanding of feedback through a group discussion. The group discussion allowed the students to reflect on what feedback is, how it can be used, and what difficulties people face in benefitting from feedback (Winstone et al., 2019). Subsequently, an activity to give the students insight in their ability to manage affect from feedback was done. The laboratory report was the red thread for the design of the other workshops, which focused on making academic judgments through exemplars, peer assessment and self- evaluation (Carless & Boud, 2018; Careless, 2020; Malecka et al., 2020). The detailed content of the workshops is presented in Appendix C.

Between workshops two and three the students revise their laboratory report, according to their insights from the exemplars and peer feedback. The students included an interactive coversheet (Malecka et al., 2020) in their laboratory report to ask for specific feedback, which enhances their evaluative judgment. Within all workshops, time was reserved for both peer dialogue and teacher centered dialogues, to guide and share common experiences.

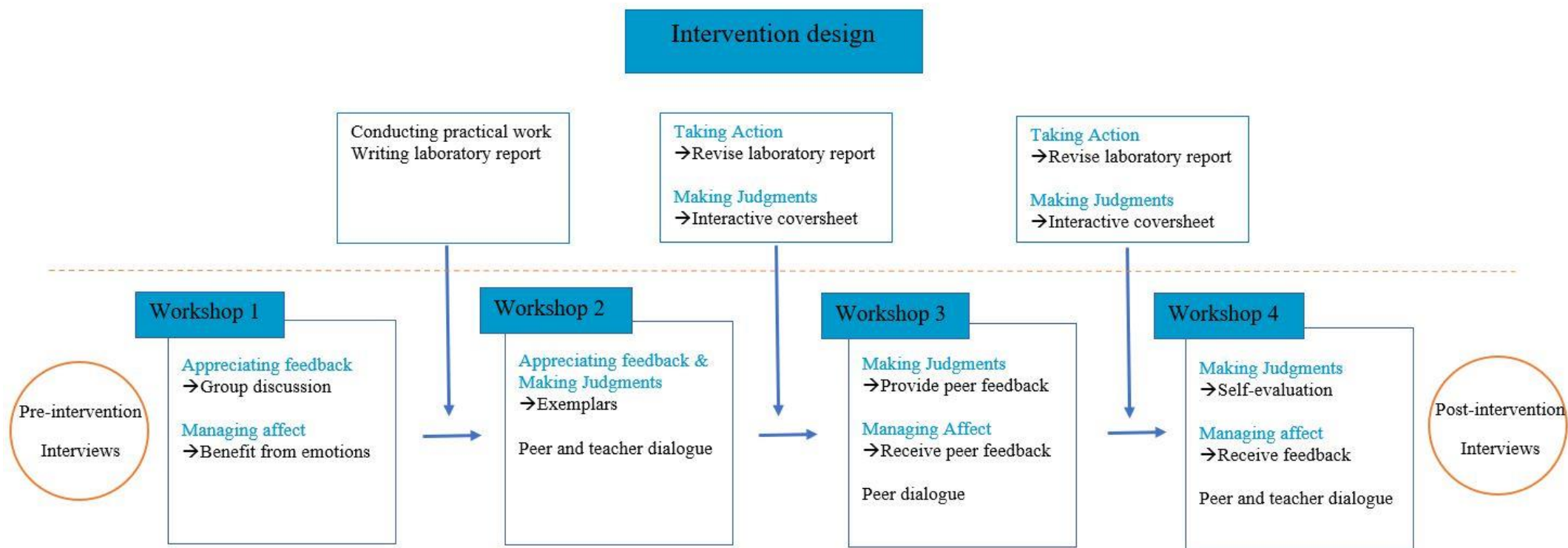


Figure 2. The design of the intervention is schematically shown in this figure. The activities above the dashed line are activities undertaken by the participants individually without guidance of the researcher or teacher. The activities below the dashed line are the activities guided by the researcher. The four features of student feedback literacy (Careless & Boud, 2018) are shaded in blue letters, to indicate which workshop activities stimulate which feature.

Procedure

Pre-intervention interviews were conducted with eight students according to the pre-intervention semi-structured interview guide (see Appendix B1). The interviews started with an explanation of the study and signing of the informed consent (Appendix D). The interviews took about 16 minutes on average and were recorded and transcribed verbatim. After the pre-intervention interviews seven students participated in four workshops of one hour. The workshops were given by the researcher, together with the mentor of the students. Between workshop one and two, the students conducted the practical work and wrote the laboratory report. Before workshop four the researcher provided feedback on the laboratory report, and provided a scoring of the laboratory report, according to a rubric. The post-intervention interviews were conducted with seven students a week after the last workshop, using the post-intervention semi-structured interview guide (see Appendix B2), and took about 15 minutes. These interviews were also recorded and transcribed verbatim.

Data analysis

The pre- and post-intervention interviews were transcribed, anonymized and analyzed using template analysis (Brooks et al., 2015; King, 2004), which permits the use of predefined themes, but also allows for changes and adaptations during the process of analysis. Template analysis in this study consisted of three steps; creating the initial template, creating the final template and coding the interviews. During the first step, the themes emerged from literature became higher order codes (Brooks et al., 2015; King,

2004). Appreciation, making judgements, managing affect, and acting, the four features of feedback literacy (Carless & Boud, 2018), were included as the higher order codes in this study. While reading the interview transcripts, the students' responses as a whole were linked to the four higher order codes and responses that did not fit were excluded.

Responses that did not fit, were mostly only yes or no answers or replies on the first factual questions not linked to either one of the four feedback literacy features. Then the initial template was created, which included clustering the responses linked to the four higher order codes into several subcodes.

During step two a second researcher, not involved in interviewing, coded 10% of the interviews, which included linking responses to the four features and code per feature according to the initial template. These data were used to calculate the interrater reliability and Cohen's kappa was found to reflect an unacceptable inter-rater agreement ($K = .49$).

Disagreement was found between the features appreciation and acting and caused this unacceptable reliability. The definition of appreciation of feedback according to Carless and Boud (2018) consist of; students understand their active role in the feedback process and the role of feedback in improving work. Both were used as subcodes for appreciation, but show interplay with acting; when students talked about what they do with the received feedback, they show understanding of their active role and the role of feedback in improving work.

Therefore, these two subcodes were merged with subcodes of acting, and afterwards, both researchers coded again 10% of the interviews. Cohen's kappa was now found .76, which

reflects an excellent inter-rater agreement. This final coding template (see Table 3) was used for coding all interview transcripts, during step three of the template analysis.

After all interviews were coded, all responses per feature were summarized to get the overall perception. Subsequently, the responses between student's pre-intervention and post-intervention were analyzed, to see the personal progress each student made.

Table 3

Final coding template

Higher order code	Subcodes	Explanation
Appreciation	Value	The student talks about the value of feedback for him
	Different forms	The student recognizes that feedback comes in different forms and from different sources
	Useful feedback	The student describes what kind of feedback is useful to him.
Affect	Emotions	The student talk about the positive or negative emotions caused by receiving, giving or asking for feedback
	Reason	The student tells why it is annoying to receive feedback
	Action	The student tells what he does with disappointing feedback
Judgment	Judge	The student tells how he judge the quality of his own work or that of others.
	Reflect	The student reflects on his own actions
	Peer feedback	Peer feedback is given on the layout and spelling
Acting	Do	The student tells what he does with the feedback he receives, the role of feedback in improving his work or themselves is and which role he plays in the feedback

	process.
Clarification	The student tells what he does if the feedback is not clear
Ask for feedback	The student tells whether he sometimes asks for feedback

Results

Within this result section the overall students' perceptions concerning the four features of feedback literacy as measured in the pre- and post-intervention interviews, will be presented. Furthermore, all participants showed individual progresses in becoming more feedback literate. Two illustrative examples of these individual development, closes this result section.

Appreciation of feedback

Pre-intervention, six out of seven students appreciated feedback given by the teacher and find feedback important to improve their work. They especially appreciate extensive, clear feedback, which indicates what is wrong, and with suggestions on how to improve. When asked what the students perceive as feedback, they reported to see feedback mainly in the form of written or oral feedback given by the teacher. Only Bert saw feedback in viewing the work of fellow students.

Despite the positive views mentioned during the pre-intervention interviews, all students indicate post-intervention that the intervention increased their appreciation of feedback. Bert replied: "Yes, because of the workshops I now understood how I can really

do my work better on the basis of feedback to make my work as perfect as possible." The students especially appreciate more forms and sources of feedback, in addition to written and oral feedback pre-intervention, such as self-evaluation with the rubric or exemplars.

Anton, Dean and Gerda see giving peer feedback now also as a way to gain insight into the quality of their own work. Four students however considered peer feedback as not valuable, and when asked why, Flora stated: 'that the fellow students are less critical, that the teacher looks more closely at the details and the students do that less.' On the other hand, most students indicate that the peer feedback is helpful for the layout or when not all criteria from the rubric are present. The teachers' feedback is still considered the most useful.

Making judgments

Before the intervention, the students indicate that they find it difficult to judge the quality of their own work before submitting it. They mainly estimate the quality of their work by gut feeling, by looking at surface features such as lay-out or by how much time they have put into their work. Cynthia and Gerda ask family or friends to look at their assignments, especially for language errors and layout before submitting it. Dean, Flora and Gerda indicate that they can better estimate familiar work, e.g., work they used to do in pre-vocational education, then new assignments with a different nature, like the laboratory report. According to Dean, the difficulty lies in not knowing which criteria their work should meet; 'But, for example, for the laboratory report, I have to take a look at the rubric, what I need to be advanced or expert, but no example is provided.'

After students have received feedback from their teacher, most students are often better able to estimate the quality of their work. They then compare their work, with the feedback and the criteria, and can judge what their score will be. Peer feedback is given according to the rubric, mainly because the teacher instructs them to do so. Students find this easy to do, the assessment is based on whether the work of the fellow student contains the parts of the rubric and looks neat. It is nice to see that some students reflect on their own actions during the interview and identify better learning strategies for themselves. Like Anton did, when asked if he looks back at previous feedback before submitting his work: 'No, actually not, I really should, because I was just working on it, and it also said, look at the previous tests what kind of feedback you got, I hadn't done it yet.'

After the intervention, four out of seven students indicate that they are better able to judge the quality of their work before submitting it. They judge the quality based on the rubric, the exemplars and the peer feedback. In workshops 4, after receiving feedback from the teacher, these four students indicate that the self-evaluation with the rubric largely corresponds with the judgment of the teacher. Eva finds it still difficult to estimate the quality of her work, but indicates that her judgement matched that of the teacher. Anton and Bert also find it difficult to estimate their work, but they said there were many differences between the result of the self-evaluation and the result of the teacher. The responses about how or on what they give peer feedback show no difference after the intervention.

Managing affect

In this description of the reactions about managing affect, Dean's responses have been omitted. The reason for this is that his ideas do not match that of the other six students, his responses are presented in the individual improvements section. Three students indicate that feedback does not trigger special emotions, and three students say they enjoy receiving feedback pre-intervention. On the other hand, all students find it annoying if their positive expectations do not match the feedback from the teacher. This does not result in a negative attitude towards feedback, they still improve their work. Yet, they doubt whether it is really necessary to receive feedback on everything, like Bert: 'But suppose that whole report has to be redone, then I sometimes think naaahh, is that really necessary?' Most students say that the way, the moment and / or the provider of feedback has no influence on their emotional response to feedback.

When asked about giving peer feedback some differences between participants are shown; some find it difficult, because they do not want to hurt the feelings of fellow students, others are happy to give feedback, because they see it as helping others. Finally, it emerged that students find it difficult to ask for clarification from the teacher, they prefer to ask fellow students. Flora gives a reason: 'Because, for example, if people don't dare to ask something during the online class, which I sometimes have, for everyone with the whole class'. Other reasons provided by the students are that they don't want to annoy the teacher, or the student is afraid not living up to the expectations of the teacher.

This aspect of student feedback literacy shows little change pre- and post-

intervention. Just an addition; Students experience receiving peer feedback and teacher feedback in the same way. They prefer the feedback from the teacher, because it is more specific and extensive. Flora elaborates: 'Because of course you get your grades from your teacher, so to speak, or say what level you are at. So then you long for that more than that of your fellow students.' Cynthia, Dean and Gerda prefer self-evaluation over giving peer feedback: 'Yes, judging yourself is easier than anyone else. If you do it to yourself, it doesn't necessarily have to be mean.'

Acting upon feedback

During the pre-intervention interviews students indicate that they, after receiving feedback, generally look at the feedback, then improve their current work and remember the feedback for the next time. None of the students look regularly back at previous feedback before submitting new work. Cynthia provides a reason, when asked why she does not look back at previous feedback: 'Yes, I don't really know why, I know about okay, for example, I have to work on my principle better and that's just okay, I'm going to work on this, I just remember that'. Some students look back at previous feedback for specific parts of their work, if they have received feedback on that part repeatedly. Dean indicates that he only interacts with the feedback if he puts energy in making the assignment.

If the feedback is unclear, the students first try to figure it out for themselves or ask their fellow students, before asking the teacher for clarification. The students do not always ask for clarification; this depends on the teacher and the student's commitment to the

assignment. If the teacher does not respond to e-mail or gives unclear answers, the students are less likely to ask for clarification. Although the students see the value of feedback, most students do not ask for feedback before submitting their work. If they do so, it is mainly because they doubt themselves. The students see their role in the feedback process to improve their current work after receiving feedback.

Most students indicate, after the intervention, that they want to adopt several new strategies to improve their new work. It is mainly mentioned that they want to make more use of the previously obtained feedback, so actively look back at it. Looking back at the exemplars, using the rubric and asking for peer feedback are more options mentioned by the students.

Individual improvements

By summarizing the interviews, as done in the section above, specific individual successes are lost. These personal successes are just as valuable, if not more valuable, than the general improvement in feedback literacy. As shown in Table 4, all students show progress in one or more features of feedback literacy. Two illustrative examples are presented in more detail here, to show the effect of the intervention. First the progress of Dean in the features appreciation of feedback and managing affect is presented, and thereafter Cynthia's progress in making judgments of her own work is shown.

Dean. When Dean arrived at the pre-intervention interview, he seemed a bit indifferent, but as the interview progressed, he showed increasing enthusiasm to talk. He

talked about his low motivation for his education, due to the Covid-19-induced home schooling, and his low interest in the assignments or the feedback received. Only when he worked hard on the assignment, he wanted to see the feedback, but he often disagreed with the teachers. He believes the feedback is just the teacher's opinion, in contrast to grades which are based on an answer sheet. At the one occasion he provided feedback to a peer, he found it a waste of time. Dean did not see the value of feedback, was emotionally indifferent on one hand and defensive on the other. The same pattern was shown during the intervention, he started with a somewhat indifferent attitude, and along the workshops progressed he showed more and more enthusiasm.

The first question asked, at the post-intervention interview, was how he experienced the workshops. His answer shows his progress in appreciating feedback: 'They were fun and informative; I now understand feedback better and now I know how to look at the assignment when I submit something and what to do with feedback I get.' He found it particularly valuable to assess himself, to give the peer feedback and to talk with the teacher about the feedback. The peer- and self-evaluation were valuable as he was able to use the peer assignment to judge his own work and he was forced to carefully read the assessment criteria in the rubric. He liked the feedback dialogue with the teacher because he was included in the teachers' way of assessing, and this showed him that the feedback was based on the assessment criteria in the rubric.

Cynthia. Cynthia enters the room for the pre-intervention interview with a lot of

energy and happiness, she is very happy to be at school again. She says, she is really disappointed that she cannot go to school every day, because she is a real people person. Her motivation is a bit lower, but her commitment is not affected. Cynthia really appreciates feedback to improve herself and her work, but tells that she has a lot of difficulty in assessing the quality of her own work before submission. She answers when asked: “ I can't do that so quickly, because for myself, I don't really know when something is good, so I usually go to my sister or to a friend to ask what would you think? What do you think is good here? Are there any spelling mistakes, is this good or is that good? And then I can kind of think okay here I have to adjust something. I can't really determine that for myself.”. After the feedback from the teacher, she could “puzzle it together” based on the assessment criteria in the rubric.

After the intervention, Cynthia says that she liked the workshops, and she benefitted the most from the teacher's feedback and the exemplars. She appreciated the exemplars because: “I got more insight from the example and I thought I still miss this, this must be added, or this can be removed. So that gave me more insight”. When the question was asked about the judgment of her own work, she answered delighted: ” Yes, that went much better, I could just estimate oh this is still missing. I didn't understand this, so yes”. Her judgment was based on the assessment criteria in the rubric and with the help of the exemplars she could estimate what was expected of her. During the last workshop, where she judged her own laboratory report with the rubric, based on the teachers' feedback and

then compared it with the teachers' judgment, she scored herself almost everywhere the same as the teacher.

Discussion

The results of this study show improvements in students' appreciation of feedback, and their making judgments about the quality of their own work. These results support the suggestions of Carless (2020), Carless and Boud (2018) and Malecka et al. (2020) that exemplars, peer feedback, revising previous work and self-evaluation stimulate student feedback literacy. Within the appreciation feature most students have come to appreciate more forms and sources of feedback, like the exemplars, peer feedback and self-evaluation after the intervention. The suggestion of Carless (2020), that exemplars can function as feedback when exposed after production of a draft is consistent with this finding. This improvement is probably due to the fact that, for the first-time students' attention was drawn to these forms and sources of feedback. This is consistent with the suggestion that appreciation of feedback comes with understanding feedback and the different forms and sources it comes by (Carless & Boud, 2018). Exemplars, peer feedback and self-evaluation foster the capacities to make sound evaluative judgments (Carless, 2020; Carless & Boud, 2018), which explains the improvement in the making judgment feature. Students indicate that the exemplars and self-evaluation with the rubric caused understanding of the assessment criteria, by which they could judge their work better.

Table 4

Individual progress of student feedback literacy.

Pseudonym	Feature	Pre-intervention	Post-intervention
Anton	Appreciation	It is helpful when someone gives you feedback	Appreciates more forms and sources from which feedback can be obtained, especially assessing peer assignments.
	Acting	Tries to remember the feedback, does not ask for feedback	By working with the feedback, he remembers it much better. Takes notes of the feedback.
Bert	Appreciation	Makes increasingly better assignments through feedback. Appreciates assessing peer assignments.	Knows even more how helpful feedback can be, and appreciates more forms and sources from which feedback can be obtained, such as the rubric.
	Judgement	Can reasonably estimate the quality of his work based on feedback and criteria, but is sometimes wrong.	Can better estimate the quality of his work using feedback and criteria, his self-evaluation aligned with that of the teacher
Cynthia	Appreciation	Appreciates feedback from the teacher to show what she did good or wrong	Appreciates several ways from which feedback can be obtained, especially the exemplars.
	Judgment	Cannot estimate the quality of her work, before submission. After feedback she is better able to do so.	Can estimate much better what the quality of her work is based on feedback and criteria.

Dean	Appreciation	Feedback is important for this training but not for him, it is not confidential.	Understands feedback better, knows better how to use it and that it is based on the rubric. Appreciates more forms and sources of feedback, especially giving peer feedback
	Affect	Find it difficult to accept feedback because it is the opinion of the teacher.	If the feedback is based on the rubric, he accepts it more easily.
Eva	Appreciation	Appreciates feedback from the teacher to show what she did good or wrong	Understands feedback better, and appreciates more forms and sources of feedback, especially the exemplars and the rubric.
	Judgment	Estimates the quality of her work by feeling or compared it to previous work	Can estimate much better what the quality of her work is based on feedback and criteria.
Flora	Acting	Reads the feedback and compares it with her answer and then tries to improve it. She asks for clarification.	Knows several ways from which feedback can be obtained, and used these methods to improve her work
Gerda	Appreciation	Appreciates feedback from the teacher to show what she did good or wrong	Appreciates more forms and sources of feedback, like the exemplars, rubric and peer assessment.
	Judgment	Finds it difficult to estimate the quality of her work before submission, especially when it is new.	Can estimate much better what the quality of her work is using the rubric and exemplars, before and after submission.

Another finding concerning making judgments was about peer feedback; the students indicate that they judge the work of a peer easily, but the feedback was of a poor quality, mainly concerning the lay-out instead of the content. To judge someone's work extensively, the students need the ability of critical thinking. According to Holmes et al. (2015), to engage in such critical thinking students need deliberate and repeated practice with targeted feedback. The students participated in this study just started their science education, and they only gave peer feedback once before the intervention, which explains their low ability to do so.

The students show no differences in the management of their affect, they do not mention any defensive behaviour towards feedback and it does not affect their actions. This is not in line with previous research of Robinson et al. (2013), who stated that students respond defensively when feedback is critical and are unable to use the feedback in this case. A possible explanation for this low emotional reaction upon feedback can be caused by low engagement with the program and motivation problems, due to the Covid-19 pandemic. Students are taught online and especially the students who started a new education during Covid-19 pandemic, have low social relations with peers or teachers (Meeter et al. 2020). Axelson and Flick (2010) state that relatedness has an influence on engagement, and without social connections with peers or teachers less engagement can be expected. Furthermore, according to the self-determination theory of Decy and Ryan (2008), relatedness is a key precursor for motivation. The students in this study claim to

only improve their work when they putted effort in their work. Which is in line with the above; when students are motivated, they act upon feedback. Another interesting finding concerning emotions, is that students prefer feedback from the teacher over peers. This contradicts the findings of Yang and Carless (2013), who state that students prefer peer feedback over teacher feedback because of the lower power differences and emotional affect. The students in this study explain that the peer feedback is not critical enough and is not in line with the teacher feedback. It seems that the students do not trust the judgment of their fellow students, which may also be due to the low relational connection. To improve student's judgment when providing peer feedback, a lot of effort is needed to stimulating students' critical thinking. When the quality of the peer feedback increases and it reflects feedback from teachers, students can benefit from peer feedback and appreciate it more. This nicely shows the relationship between appreciation and managing affect.

Contrary to expectations, the improvement in the appreciation and making judgment feature did not cause improvement in the acting feature, like suggested in Carless and Boud's (2018) student feedback literacy model. In general, before the intervention, all students indicate that they try to remember the received feedback to improve future work. Post intervention, most students saw the benefit of looking back at previously received feedback or the exemplars and rubric and mention they will try to do it next time. This shows more appreciation for these forms and sources of feedback, but cannot be classified under the acting feature, because the students did not do it yet.

These results imply that, with educational activities, features of student feedback literacy can be stimulated. It is debatable if an improvement in two out of four features can count for an improvement of the whole concept of student feedback literacy. However, like Carless and Boud (2018) mentioned, educational activities to stimulate feedback literacy should be core elements of the curriculum. If after only one intervention this kind of progress is shown, it would be assumable that repeating these types of educational activities will stimulate students further in becoming more feedback literate. Thereby, all students are different, and should be able to take different paths in their ability to make use of and act on feedback over time.

It is important to bear in mind the possible bias in the responses of the students, caused by the relationship with the researcher. Venting one's frustration about online education, recalling both good and bad memories and just listen, are examples of things that could easily be part of a friendship as well as a research relationship (Eide & Kahn, 2008). This relationship can increase social desirability tendencies, especially in research on emotional issues with adolescents (Grimm, 2010). Therefore, the answers about managing affect need to be interpreted with caution. Furthermore, students can feel the need to impress teachers, and can therefore tend to present oneself in a way that is perceived socially acceptable (Bergen & Labonté, 2020). Taking that into account, it would be stronger to expand this rich interview data with measurements of behaviour or quantitative research. Like, comparing the score of the teacher with that of the self-evaluation to assess

whether they are really better in judging their own work. Other limitations of this study are the small population, the short timeline and the indications students made. To broaden this investigation a larger population should be explored, probably within different schools and cities, so the results can be more generalizable to the whole population. Furthermore, this study was conducted within six weeks, it would be considerably more sufficient to lengthen the investigation. First of all, to investigate the longer-term effect of the intervention, interviewing after the next laboratory report to hear if they really changed their learning strategy. Secondly, to monitor the development of student feedback literacy during the entire training or after multiple interventions, to see if the progress continues.

Suggestions for follow-up topics within the intervention would include critical thinking to stimulate higher quality peer feedback. This will help the students on both sides; get more from the feedback of peers and learn more about giving feedback to peers. Furthermore, try to stimulate students to really do something with the feedback instead of only remembering it. This is likely to increase their ability to revise work and can be accomplished with a system that allows students to organize their feedback.

To conclude, this study shows that the use of exemplars, peer feedback, revising previous work, and self-evaluation stimulate two features of student feedback literacy; the appreciation of feedback and the ability of students to make evaluative judgments about their own work. It would be preferable to extend this research, to see the long-term effects of the intervention. Future research should focus on developing activities to stimulate

students in managing their affect, act upon feedback and develop critical thinking.

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Appendix A

A1. Format Laboratory report.

Meetverslag Totaal eiwit bepaling (exp 39 BV biologie)**Naam:****Klas:****Datum:****Doel:***<Wat is het doel van deze bepaling(en), en wat zijn de kwaliteitseisen?>*

Geef kort en duidelijk aan wat er onderzocht/bepaald gaat worden (kijk naar titel). Noteer ook waaraan het resultaat moet voldoen om betrouwbaar te zijn (kwaliteitseisen).

Materiaal en methode:*<Verwijs naar protocol en vul aan met afwijkingen en een beknopte beschrijving van de gevolgde werkwijze. Registreer het gebruikte materiaal en noteer de belangrijke verdunningen en pipeteerschema's (indien niet in het protocol). >*

Voor de beknopte beschrijving van de gevolgde werkwijze, kan je eventueel gebruik maken van een tekening of foto (van de opstelling). Houd de beschrijving kort en overzichtelijk en schrijf in de verleden tijd zonder onderwerp (=ik, jij, wij enz)

Vb:

Het eiwitgehalte is bepaald in verschillende monsters = juist

Ik heb het eiwitgehalte bepaald in verschillende monsters= onjuist

Bepaal het eiwit in verschillende monsters = onjuist

Meetwaarden:*<Geef de meetwaarden, inclusief gebruikte standaarden en controlemonsters overzichtelijk weer in een tabel of meerdere tabellen.>*

Meetwaarden zijn de ruwe data, in dit geval de gemeten extincties van de standaarden en monsters.

Grafiek:*<Maak van de standaarden een grafiek in Excel en voeg deze hieronder in. Voorzie, indien van toepassing, de assen van grootheden en eenheden met legenda. Geef de grafiek een passende titel (onder de grafiek)>*

Je moet hier de grafiek in Excel maken, wat niet moet maar wel mag is m.b.v. de trendlijn de lineaire regressie formule toevoegen en hiermee de concentratie berekenen. Hier zijn jullie mee bezig tijdens wiskunde. Lukt dit nog niet, dan is alleen de grafiek ook goed. Zorg dan dat je lijnen toevoegt van de extinctie op de y-as tot aan de curve en dan naar beneden naar de x-as, zodat je de concentratie kan aflezen. (misschien moet je dan de verdeling op de x-as aanpassen om het nauwkeuriger te kunnen aflezen)

Voorbeeld-resultatenberekening(en):

<Geef voor elk type berekening de formule (vergelijking van de trendlijn (als je dit doet), gemiddelde, S en VC) met legenda en één ingevulde berekening.>

Resultaten:

<Geef de uitgewerkte (berekende) resultaten overzichtelijk weer in een tabel met legenda (Geef monsternamen, concentraties, berekende gemiddelde, S en VC).>

De tabel die je hier moet maken is een combinatie van tabel 6 en 7 uit het voorschrift

Referentiewaarde eiwitgehalte in bloed: (zoek op, staat in BV biologie)**Discussie van de resultaten:**

<Geef aan en onderbouw hoe je bepaald of de resultaten betrouwbaar zijn, bespreek dus de SD en VC van de resultaten. Onderbouw wat de oorzaken van de afwijkingen kunnen zijn.>

Beantwoord de volgende vragen:

1. Hebben je nauwkeurig gewerkt? (kijk naar duplo's, SD en VC)
2. Wat zou de oorzaak van meetfouten kunnen zijn? (Wat zou er mis kunnen zijn gegaan?)
3. Wat zou je de volgende keer anders willen doen?

Conclusie:

< Geef hier aan of de resultaten betrouwbaar zijn en wat de resultaten zijn, vergelijk deze met de referentie waarden.>

Het eerste deel van de conclusie is het vervolg van de discussie, dus concludeer of de resultaten betrouwbaar zijn of niet. Het tweede deel van de conclusie is het antwoord op de onderzoeksvraag of de realisering van het doel. Dus welke resultaten heb je gevonden en vallen deze binnen of buiten de referentiewaarden.

Bronvermelding:

<Vermeld hier de bronnen die je gebruikt hebt.>

Bij de verwijzing naar labjournaal, naam analist en paginanummers vermelden

Bij verwijzing naar internetsites, de site, datum en tijd vermelden

Bij verwijzing naar boeken, titel, auteur, jaar van uitgave vermelden

A2. Development rubric

Rubric meetrapport eiwit bepaling (periode 3):

Onderdeel	Beginner	In ontwikkeling	Gevorderde	Expert
Naam, klas, datum	Ik heb geen naam, klas en datum genoteerd	Ik heb alleen een naam en/of klas en /of datum genoteerd	Ik heb naam, klas en datum genoteerd	Ik heb naam, klas en datum genoteerd
Lay-out	De lay-out is zo aangepast dat het niet meer overzichtelijk is en/of de uitleg zinnen (tussen <> en in het groen) zijn niet verwijderd.	De lay-out is niet aangepast, maar de uitleg zinnen (tussen <> en in het groen) zijn niet verwijderd. Of andersom.	De lay-out is niet aangepast en de uitlegzinnen (tussen <> en in het groen) zijn verwijderd. De tabellen en figuren hebben een titel en nummer.	De lay-out is niet aangepast en de uitlegzinnen (tussen <> en in het groen) zijn verwijderd. De tabellen en figuren hebben een juiste titel en nummer. Er zijn extra kopjes toegevoegd voor meer structuur.
Taal/spelling fouten	Ik maak geen gebruik van de Nederlandse beroepstaal en vaktermen en maak daarbij veel taal- en/of spellingsfouten	Mijn gebruik van de Nederlandse beroepstaal en vaktermen is bijna altijd juist. Ik maak nog regelmatig taal- en/of spellingsfouten.	Mijn gebruik van de Nederlandse beroepstaal en vaktermen is juist. Ik maak nog weinig taal- en/of spellingsfouten.	Mijn gebruik van de Nederlandse beroepstaal en vaktermen is juist. Ik maak geen taal- en/of spellingsfouten.
Doel	Het doel is onvolledig of niet correct, de kwaliteitseisen zijn niet gegeven of niet correct.	Het doel is correct, maar niet volledig en de kwaliteitseisen zijn niet volledig of niet correct.	Het doel en de kwaliteitseisen zijn volledig en correct.	Het doel en de kwaliteitseisen zijn volledig en correct. De minimale waarde van de kwaliteitseisen is gegeven.
Materiaal en methode	Er wordt niet verwezen naar de gebruikte	Er wordt verwezen naar de gebruikte	Er wordt verwezen naar de gebruikte	Er wordt verwezen naar de gebruikte

(wp: registreert materiaal en bewerkt materiaal voor)	<p>protocollen en wijzigingen in het protocol worden niet vermeld. Gegevens van gebruikte apparatuur en/of gebruikte instellingen/parameters worden niet vermeld.</p>	<p>protocollen. Wijzigingen in het protocol en/of referentiewaarden (of verwachte waarden) worden vermeld maar zijn niet correct of onvolledig. Gegevens van gebruikte apparatuur en/of gebruikte instellingen/parameters worden vermeld maar zijn niet correct of onvolledig.</p>	<p>protocollen. Wijzigingen in het protocol en de referentiewaarden of verwachte waarden worden gegeven. Gegevens van gebruikte apparatuur en/of gebruikte instellingen/parameters worden correct en volledig vermeld. Kleine fouten mogen nog aanwezig zijn.</p>	<p>protocollen. Wijzigingen in het protocol worden volledig gegeven. Referentiewaarden of verwachte waarden worden correct gegeven. Gegevens van gebruikte apparatuur en/of gebruikte instellingen/parameters worden correct en volledig vermeld.</p>
	<p>Gegevens van samples worden niet vermeld.</p>	<p>Gegevens van samples worden vermeld maar zijn onvolledig en/of bevatten vertrouwelijke informatie.</p>	<p>Relevante gegevens van samples worden bijna allemaal correct en volledig weergegeven. Vertrouwelijke informatie wordt niet gegeven.</p>	<p>Relevante gegevens van samples worden volledig en correct weergegeven. Vertrouwelijke informatie wordt niet gegeven.</p>
	<p>Ik voer berekeningen onvolledig of niet correct uit.</p>	<p>Mijn berekeningen zijn niet altijd correct en volledig uitgevoerd en genoteerd en/of eenheden ontbreken.</p>	<p>Mijn berekeningen zijn bijna altijd correct en volledig uitgevoerd en genoteerd. Kleine fouten in de berekeningen zijn nog aanwezig en/of soms is de eenheid vergeten.</p>	<p>Mijn berekeningen zijn altijd correct en volledig uitgevoerd en genoteerd.</p>

Meetwaarden (wp: Voert basis analyses uit)	De meetwaarden zijn onbetrouwbaar.	De meetwaarden zijn nog niet altijd betrouwbaar.	De analyse resulteert bijna altijd in betrouwbare meetresultaten.	De analyse resulteert in betrouwbare meetresultaten.
	Ik rapporteer de meetwaarden onvolledig of incorrect en/of vergeet relevante informatie.	Ik rapporteer de meetwaarden. Daarbij maak ik nog wel eens fouten en/of ik vergeet relevante informatie.	Ik rapporteer de meetwaarden en relevante informatie bijna altijd nauwkeurig en volledig. Ik heb mijn meetwaarden gecontroleerd.	Ik rapporteer de meetwaarden en relevante informatie nauwkeurig en volledig. Ik heb mijn meetwaarden gecontroleerd.
Grafiek (wp: Beoordeelt en rapporteert meetwaarden)	De grafiek is niet in Excel gemaakt.	De grafiek is in Excel gemaakt, de assen zijn niet correct benoemd en/of eenheden ontbreken en/of de grafiek heeft geen correcte titel.	De grafiek is in Excel gemaakt, de assen zijn correct benoemd inclusief eenheden, de grafiek heeft een correcte titel.	De grafiek is in Excel gemaakt, de assen zijn correct benoemd inclusief eenheden, de grafiek heeft een correcte titel. De lineaire regressie formule is in de grafiek afgebeeld.
Resultaat berekeningen: (wp: Beoordeelt en rapporteert meetwaarden)	Ik voer berekeningen onvolledig of niet correct uit.	Mijn berekeningen zijn niet altijd correct en volledig uitgevoerd en genoteerd en/of eenheden ontbreken.	Mijn berekeningen zijn bijna altijd correct en volledig uitgevoerd en genoteerd. Kleine fouten in de berekeningen zijn nog aanwezig en/of soms is de eenheid vergeten.	Mijn berekeningen zijn altijd correct en volledig uitgevoerd en genoteerd. De concentraties zijn berekend aan de hand van de lineaire regressie formule.
Resultaten (wp: Beoordeelt en rapporteert meetwaarden)	Ik rapporteer de resultaten onvolledig of incorrect en/of vergeet relevante informatie.	Ik rapporteer de resultaten. Daarbij maak ik nog wel eens fouten en/of ik vergeet relevante informatie.	Ik rapporteer de resultaten en relevante informatie bijna altijd nauwkeurig en volledig.	Ik rapporteer de resultaten en relevante informatie nauwkeurig en volledig. Ik heb mijn

			Ik heb mijn resultaten gecontroleerd.	resultaten gecontroleerd.
Discussie en conclusie (wp: Beoordeelt en rapporteert meetwaarden)	Mijn conclusie/discussie ontbreekt of sluit niet aan op het doel van de praktijk. Bijzonderheden, fouten en/of afwijkingen worden niet benoemd.	Mijn conclusie/discussie is onvolledig of sluit gedeeltelijk aan op het doel van de praktijk. Bijzonderheden, fouten en/of afwijkingen worden gedeeltelijk benoemd.	Mijn conclusie/discussie sluit aan op het doel van de praktijk. Ik heb een conclusie getrokken over de betrouwbaarheid van de resultaten en/of ik heb aangeven of de gevonden resultaten binnen de referentiewaarden liggen, maar deze conclusie is niet toegelicht. Bijzonderheden/ fouten en/of afwijkingen worden benoemd.	Mijn conclusie/discussie is volledig, sluit aan op het doel van de praktijk en herhaald de belangrijkste resultaten. Ik heb een conclusie getrokken over de betrouwbaarheid van de resultaten en/of er is aangeven of de gevonden resultaten binnen de referentiewaarden ligt. Ik heb toegelicht waarom de resultaten betrouwbaar zijn. Bijzonderheden/ fouten en/of afwijkingen zijn benoemd en een mogelijke verklaring voor de afwijking wordt gegeven.
Bronvermelding	De bronvermelding is onvolledig of incorrect.	De bronvermelding is volledig, maar incorrect genoteerd.	De bronvermelding is volledig en correct.	De bronvermelding is volledig en correct. De bronnen zijn genummerd en verwezen naar de tekst.

Appendix B.

B1 Pre-intervention Interview guide

Semi structured interview over feedback literacy pre-interventieDoel van het onderzoek:

De effectiviteit beoordelen van specifieke onderwijsactiviteiten, zoals het gebruik van voorbeelden en peer feedback, op de ontwikkeling van feedback geletterdheid bij studenten.

Doel van het interview:

Inzicht krijgen in de huidige status van feedback geletterdheid bij studenten.

Interview met: 8 eerste jaars studenten van het MLO

Soort vragen: Open en gesloten vragen

Volgorde van de vragen:

Eerst worden feitelijke vragen gesteld over het algemene thema, daarna per onderdeel van feedback geletterdheid hoe- en waarom- vragen en meningsvragen.

Interview:Opening sectie:

- Welkom en uitleg over het onderzoek, specifiek benoemen dat het geluid opgenomen wordt.
- Informatiebrief laten lezen
- Toestemmingsformulier laten tekenen
- Bedanken voor deelname

Uitleggen dat er geen goede of foute antwoorden zijn, dat het mij gaat om hun indruk of ervaring met de onderwerpen, er zijn geen consequenties voor beoordelingen.

Feitelijke vragen:

1. Je zit nu iets meer dan een half jaar op het MLO en hebt al wat ervaring met het formatief toetsen binnen de opleiding. Kan je mij vertellen wat formatief toetsen is, en waaruit het bestaat volgens jou?
2. Kan je vertellen wat feedback is?
3. Op hoeveel opdrachten heb je feedback ontvangen de afgelopen twee periodes, ongeveer?
4. Heb je ook al op je vooropleiding ervaring opgedaan met feedback?

Midden sectie:**Affect:**

1. Je hebt al regelmatig feedback ontvangen op producten. Hoe reageer je meestal op feedback? Wat doet het met je?
 - a. Heb je wel eens dat je denkt dat je de opdracht goed hebt gemaakt, maar dat dan niet zo blijkt te zijn? Hoe vind je dat?

- b. In hoeverre heeft dit te maken met hoe je je voelt, de docent, de manier van feedback (feedback gever, manier, hoe jij op dat moment voelt, stond je ervoor open)
2. Kan je een voorbeeld geven van fijne feedback?
 - a. Waarom is het fijn?
3. Kan je een voorbeeld geven van minder fijne feedback?
 - a. Waarom is het minder fijn?

Acting:

1. Kan je stap voor stap aangeven wat je meestal doet met de feedback die je hebt gekregen?
 - a. En is er nog een verschil in wat je doet met fijne en minder fijne feedback?
2. Heeft de feedback jou geholpen om het werk te verbeteren?
 - a. Zo ja, hoe?
 - b. Zo nee, waarom niet?
3. Als je feedback hebt ontvangen, vraag je dan wel eens om verduidelijking?
 - a. Zo ja, bij wie vraag je dan om verduidelijking?
 - i. En heeft dat geholpen?
 - b. Zo nee, wat doe je dan met de feedback die je niet begrijpt?
4. Nu zijn er meerdere producten die je regelmatig moet inleveren of doen, zoals je labjournaal, meetrapport of een presentatie. Voordat je aan zo'n nieuwe opdracht begint, bekijk of denk je dan nog eens aan de feedback die je eerder hebt ontvangen?
 - a. Zo ja, waarom doe je dat?
 - i. Kan je een voorbeeld geven?
 - ii. Op welke manier helpt dat jou?
 - b. Zo nee, waarom niet?

Making judgments:

1. Als je een product gemaakt hebt, weet je dan of je het goed gemaakt hebt of niet?
 - a. Hoe weet je dat?
2. Vervolgens krijg je feedback van de docent, kan je dan aan de hand van de feedback zien op welke niveau in de rubric je beoordeeld zou zijn?
 - a. Hoe zie je dat?
3. Heb je al eens peer feedback gegeven?
 - a. Hoe vond je dat?
 - b. Hoe heb je toen ingeschat hoe goed het werk van de medestudent was? Hoe zie je dat?
 - c. Hoe bepaal je op welke punten je feedback gaat geven?

- d. Kan je een voorbeeld geven waarbij je bruikbare feedback hebt gegeven aan een medestudent of groepsopdracht? Hoe werd daarop gereageerd?

Appreciation of feedback

1. Welke rol speelt feedback in jouw leerproces?
2. Wat is voor jou de waarde van feedback?
 - a. Waarom is dat voor jou nuttig?
 - b. Belang van feedback

Check vraag (als ze feedback waarderen dan zouden ze dit doen)

3. Vraag je zelf weleens om feedback?
 - a. Zo ja, kan je een voorbeeld geven waarbij je zelf om feedback hebt gevraagd?
 - b. Zo nee, waarom niet?

Laatste sectie:

Wil nog iets toevoegen?

Wil nog iets vragen over het onderzoek?

Ik ga nu het interview uittypen en zal het dan aan jou mailen, mijn vraag is of je dit dan door wilt lezen en wilt aangegeven of je het ermee eens bent of niet. Na de workshop zal ik nog een keer een interview bij je afnemen.

B2 Post-intervention interview guide

Post-interventie Semi structured interview over feedback literacyDoel van het onderzoek:

De effectiviteit beoordelen van specifieke onderwijsactiviteiten, zoals het gebruik van voorbeelden en peer feedback, op de ontwikkeling van feedback geletterdheid bij studenten.

Doel van het interview:

Inzicht krijgen in de huidige status van feedback geletterdheid bij studenten.

Interview met: 8 eerste jaars studenten van het MLO

Soort vragen: Open en gesloten vragen

Volgorde van de vragen:

Eerst worden feitelijke vragen gesteld over het algemene thema, daarna per onderdeel van feedback geletterdheid hoe- en waarom- vragen en meningsvragen.

Feitelijke vragen:

1. Je hebt deelgenomen aan de vier workshops over feedback. Workshop 1 ging over de definitie van feedback en verschillende gevoelens die feedback kunnen opwekken. Tijdens workshop 2 ben je aan de slag gegaan met voorbeelden en in workshop 3 heb je feedback gegeven aan een medestudent en feedback ontvangen. De laatste workshop heb je feedback ontvangen van de docent en daarmee jezelf beoordeeld op de rubric. Wat vond je van de workshops?
2. Welk onderdeel vond je nuttig en waarom?
3. Welk onderdeel niet en waarom?

Midden sectie:

Ik heb deze keer gekozen om de verschillende onderdelen van feedback literacy door elkaar heen te bevragen, ipv bij de eerste keer gestructureerd (zie onder de vragen de oude opzet). De vragen heb ik de kleur gegeven van het onderdeel, waarvan ik denk dat ik naar vraag.

Appreciation

Affect

Judgment

Acting

Verder wil ik bij studenten die bv aangeven in het eerste interview dat ze hun eigen werk beoordelen moeilijk vinden, wat dieper doorvragen. En ik gebruik het meetrapport bij de interviews.

4. Kan je uitleggen op welke manieren je feedback hebt gekregen tijdens de workshops?
 - a. Wat vond je van deze verschillende manieren/methode?

- b. Hebben ze je geholpen om inzicht te krijgen in de kwaliteit van je eigen werk?
 - i. Zo ja, hoe?
 - ii. Zo nee, waarom niet?
 - c. Welke manier/methode waardeert je het meest? Dus wat was voor jou het meest nuttig? En waarom?
 - i. Heeft de nuttige feedback methode je geholpen je meetrapport te verbeteren?
 - d. Welke manier/methode vond je niet nuttig? En waarom niet?
5. Wat vond je van de feedback die je hebt gekregen van je medestudent?
 - a. Hoe heeft dat jou geholpen?
6. Hoe heb je de feedback die je hebt ontvangen van je medestudent ervaren (emotioneel gezien)?
7. Hoe vond je het feedbackgesprek met de student aan wie je feedback hebt gegeven?
 - a. Had hij/zij specifieke vragen?
 - b. Vond hij/zij het duidelijk en nuttig?
8. Hoe vond je het feedbackgesprek met de student van wie je feedback hebt ontvangen?
 - a. Heb je hem/haar specifieke vragen gesteld?
 - b. Was de feedback duidelijk? En nuttig?
9. Hoe vond je het om je medestudent te beoordelen mbv de rubric en geschreven feedback?
 - a. Waar heb je vooral op gelet en waarom daarop?
 - b. Hoe heb je bepaald waar je feedback op ging geven?
 - c. Heb je zelf nog iets gezien in het meetrapport van je medestudent, waarvan je dacht, oh dat is handig voor mijn eigen meetrapport?
 - i. Zo ja, wat?
10. Heb je mbv de rubric, de voorbeelden en peerfeedback kunnen inschatten wat de kwaliteit van jouw werk was voordat je het definitief inleverde?
 - a. Zo ja, hoe heb je dat aangepakt?
 - b. Zo nee, waarom niet?
 - i. Wat heb je nodig om meer inzicht te krijgen in de kwaliteit van je eigen werk?
11. Wat vond je van de feedback die je hebt gekregen van de docent?
 - a. Heeft het jou geholpen?
12. Hoe heb je de feedback die je hebt ontvangen van de docent ervaren (emotioneel gezien)?
 - a. Viel het tegen, viel het mee?
13. Heb je mbv de feedback van de docent kunnen inschatten waar je zou scoren op rubric?
 - a. Hoe wist je dat?
14. Kwam jouw eigen beeld van de kwaliteit van je werk overeen met dat van de docent?
 - a. Waarom wel of niet?

15. Hoe vond je het feedbackgesprek wat je achteraf hebt gevoerd met de docent?

a. Heeft dat verduidelijking gebracht?

16. Heeft de feedback van de docent en het gesprek jou geholpen om je meetrapport te verbeteren?

a. Zo ja, hoe?

b. Zo nee, waarom niet?

17. Je hebt nu geloof ik al drie keer een meetrapport gemaakt, is er feedback die je vaker hebt gekregen?

a. Zo ja, hoe ben je van plan hiermee om te gaan?

18. Kan je voor jezelf nu een methode bedenken waardoor je het meeste haalt uit het feedbackproces, zodat je producten sneller het juiste niveau hebben?

19. Welke rol is voor jezelf weggelegd in het hele feedbackproces?

20. Wat ga je de komende tijd voor jezelf uitproberen?

Appendix C. Detailed information workshops.

Workshop 1:**Opstarten → 5 minuten**

Leg de studenten uit dat ze de komende weken deelnemen aan 4 workshops en dat het meetrapport de leidraad van de workshops is. Ze leveren volgende week het meetrapport voor de eerste keer in, ze worden dan niet beoordeeld. Vervolgens krijgen ze een workshop waarin ze voorbeelden van meetrapporten krijgen te zien, na de workshop gaan ze hun meetrapport verbeteren aan de hand van de opgedane kennis van de voorbeelden. Een week later leveren ze weer het meetrapport in, dit wordt opnieuw niet beoordeeld door de docent, tijdens de volgende PU gaan ze elkaar feedback geven. Dan hebben ze een week de tijd om deze feedback te verwerken en een definitieve versie in te leveren. De laatste workshop zal dan gaan over zelf evaluatie.

Onderdeel 1: Groepsproces definitie feedback.

Tijd: 25 minuten

Doel:

- Een gezamenlijke werkbare definitie ontwikkelen over feedback

De definitie uit de literatuur is als volgt:

- Feedback is een proces waarbij studenten proberen informatie te begrijpen van verschillende bronnen en deze informatie gebruiken om toekomstige prestaties en het leren te verbeteren.

Benodigheden:

- Post-its in 4 kleuren
- 4 vellen papier
- Bordstift
- PowerPoint

Schrijf op elk vel een vraag:

- Wat is feedback?
- Wat is de functie van feedback voor jou?
- Van waar, wat en wie krijg je feedback?
- Waarom is feedback soms moeilijk om te krijgen?

Markeer de vellen met een kleuren post-it

Geef de studenten 4 verschillende kleuren post-its en laat ze hierop de antwoorden schrijven. Elke post-it komt op het juiste vel.

Daarna gaan de studenten in tweetallen de post-its rangschikken op de vellen (iedere tweetal 1 vel) en vatten de antwoorden samen in een korte zin.

Deze korte zinnen komen samen op het bord en is dan de definitie van feedback.

Laat de studenten dit samen verfijnen en erop reageren.

Onderdeel 2: Reacties op feedback

Tijd: 30 minuten

Doel:

- Begrip tonen voor verschillende reacties op feedback
- Waar let je op bij het geven van feedback.

Benodigdheden:

- Uitgeprint meetrapport met feedback
- Drie kleuren stiften

Deel de meetrapporten uit aan de studenten en geef ze ook 3 kleuren stiften. Vertel de studenten dat ze zich moeten indenken dat dit een meetrapport is waar ze heel veel tijd in hebben gestoken, en waarvan ze echt denken dat het super goed is.

10 minuten → Individueel lezen ze de feedback en zetten rode stippen bij de feedback waar ze boos van worden, blauw bij neutrale feedback en groen bij feedback waar ze blij van worden.

10 minuten → Daarna bespreken ze in tweetallen wat ze vonden en waarom.

De laatste tien minuten is voor de terugkoppeling. Wat is hun opgevallen, wat zijn de verschillen tussen de twee studenten en de tweetallen. Waar moet je op letten als je iemand feedback geeft of als je het krijgt?

Noteer op het bord de aandachtspunten voor het geven en krijgen van feedback.

Workshop 2: Aan de slag met voorbeelden.

Plaats de studenten in groepjes van 2 en geef de studenten de voorbeelden. Geef de studenten de opdracht om per kopje (doel, principe, methode enz) de voorbeelden te vergelijken.

Laat de studenten aan de hand van de rubric bepalen welk meetrapport op beginners, in ontwikkeling, gevorderd of expert niveau geschreven is.

Bespreek klassikaal de volgorde van de meetrapporten

Beginners niveau: meetrapport 3

In ontwikkeling: meetrapport 1

Gevorderde: meetrapport 4

Expert: meetrapport 2

Laat de studenten nu in tweetallen het in ontwikkeling en gevorderde meetrapport bespreken, per onderdeel. Wat zijn de duidelijke verschillen?

Bespreek dit klassikaal na en noteer op het bord wat de studenten zeggen.

Wat zijn nu de succescriteria voor het meetrapport (dus wat moet de student doen om het meetrapport op het juiste niveau te krijgen)

Geef de studenten de opdracht om hun meetrapport aan te passen mbv de opgedane kennis van deze workshop. In TEAMS vinden zij een nieuwe opdracht genaamd:

P3.BM.Meetrapport eiwitbepaling versie 2

Extra bij deze versie is dat ze 2 feedback vragen moeten formuleren aan het begin van het meetrapport. Leg de studenten uit dat ze hier een vraag stellen aan hun feedbackgever, zodat ze feedback krijgen over datgene waar ze nog onzeker over zijn. Nieuwe inleverdatum is de volgende week, 1 dag voor het fysieke PU.

Drie soorten feedbackvragen:

Probleemgerichte feedback vragen: Ik loop hier tegenaan, ik denk dat het zo moet, maar wat denk jij?

Onderwerpgerichte feedbackvragen: Ik zou graag feedback krijgen over dit onderdeel, ik twijfel of het helemaal goed is.

Blinde vlek gerichte feedbackvragen: Ik denk dat ik het meetrapport / onderdeel goed heb gemaakt. Wil jij kijken of ik iets over het hoofd heb gezien.

Workshop 3: Peer feedback

Print de ingeleverde meetrappen uit nadat je ze anoniem hebt gemaakt (naam weghalen en nummer geven).

5 minuten: Haal aan het begin van de workshop terug wat ook alweer nuttige feedback is (uit workshop 1). Hoe je dat formuleert en waar je op moet letten. Geef de studenten vervolgens de volgende opdracht mee:

- Geef je feedback aan de hand van de beoordelingscriteria van de opdracht. Baseer je feedback hierop en refereer hier ook naar.
- Geef duidelijke feedback; concreet en onderbouwd met argumenten.
- Laat je feedback suggesties voor verbeteringen bevatten. Geef dus goed aan waar je medestudent iets aan moet passen om het werk te verbeteren.

30 minuten: Deel de meetrappen uit aan de studenten en geef ze de rubric. De studenten gaan nu feedback geven op het meetrapport. Handig is om twee studenten met elkaar uit te wisselen (dus student 1, krijgt meetrapport 2, en student 2 krijgt meetrapport 1)

5 minuten: Geef de meetrappen aan de studenten terug en laat ze de gekregen feedback doorlezen.

10 minuten: laat de studenten met elkaar overleggen en om verduidelijking vragen.

Geef de studenten de opdracht om hun meetrapport aan te passen mbv de opgedane kennis van deze workshop. In TEAMS vinden zij een nieuwe opdracht genaamd:

P3.BM.Meetrapport eiwitbepaling versie 3

Extra bij deze versie is dat ze ook moeten omschrijven wat ze met de gekregen feedback hebben gedaan, dus welke feedback hebben ze gebruikt en waarom. Dit gaat niet alleen om de peerfeedback maar ook om de tips van de voorbeelden. Nieuwe inleverdatum is de volgende week.

Dan voor workshop 4: (twee weken na workshop 3)

De projectbegeleider geeft feedback op de gegeven feedback (zie rubric feedback geven)

De Biologie docent geeft feedforward op het meetrapport (dus wat kunnen ze de volgende keer beter doen) in teams maar daarbij geven ze geen oordeel (dus niet noteren als je dit of dit nog doet dan ben je op gevorderde niveau). Daarnaast wordt de Rubric ingevuld (zie Rubric meetrapport). Deze Rubric beoordelingen worden NIET aan de studenten gegeven maar aan de projectbegeleiders.

Workshop 4: Zelf evaluatie

Laat de studenten hun eigen meetrapport beoordelen aan de hand van de Rubric. Geef de studenten vervolgens de door de Biologie docent ingevulde Rubric terug.

Komen de beoordelingen overeen? Ga met de studenten in gesprek over de beoordeling, kunnen ze zich vinden in de beoordeling van de docent als ze er nog eens naar kijken?

Hebben de workshops geholpen om hun meetrapport te verbeteren?

Wat vonden ze de meest nuttige workshop?

Wat vonden ze van het geven van de peer feedback? Hielp dat hun ook om nog eens naar hun eigen meetrapport te kijken?

Appendix D: Informed consent

Beste student,

Mijn naam is Silvia Hoogvorst en ik volg de master Onderwijswetenschappen van de Universiteit Utrecht. Voor mijn masterthesis onderzoek wil ik mij richten op het gebruik van feedback door studenten. De punten die van belang zijn voor het onderzoek zijn of studenten feedback waarderen, kritisch oordelen over hun werk, om kunnen gaan met emoties die kunnen ontstaan door feedback en reageren op feedback door hun werk en toekomstig werk te verbeteren.

Wat is het doel van het onderzoek?

Er is veel onderzoek gedaan naar de manieren waarop docenten feedback moeten geven aan studenten. Denk dan aan het moment van feedback geven, of aan hoe het geformuleerd moet worden. Toch is gebleken dat docenten en studenten het feedback proces niet goed vinden verlopen. In mijn onderzoek wil ik, door middel van workshops, studenten helpen om meer gebruik te maken van feedback. Mijn onderzoeksvraag is: Wat is het effect van de workshops op het gebruik van feedback door studenten.

Wat houdt het onderzoek in?

De komende weken doe je tijdens de fysieke projecturen, mee aan vier workshops (eerste workshop 17-3-2021, laatste workshop 14-4-2021). De rode draad door de workshops is jouw totaal eiwit bepaling meetrapport die je moet schrijven voor Biologie. Als je besluit deel te nemen aan dit onderzoek wil ik je voor de start van de eerste workshop interviewen over hoe je aankijkt tegen feedback. Na de vierde workshop wil ik je nogmaals interviewen, om te kunnen beoordelen of de workshops jouw gebruik van feedback heeft veranderd. De interviews worden opgenomen met behulp van de dictafoon app en zullen ongeveer 45 minuten duren.

Privacy en vertrouwelijkheid

Alle audio wordt vertrouwelijk behandeld en anoniem verwerkt. Dat wil zeggen dat straks in de uitkomsten van het onderzoek niet te zien is welke antwoorden jij gegeven hebt. Nadat de interviews uitgewerkt zijn, kan je deze nalezen en veranderingen aanbrengen indien nodig. Vervolgens worden de audiobestanden verwijderd. De gegevens worden alleen voor onderzoeks- en opleidingsdoeleinden gebruikt. Gedurende het hele onderzoek mag je op elk moment stoppen, zonder dat je hoeft uit te leggen waarom je wilt stoppen.

Als je nog vragen hebt over het onderzoek, stel die dan nu of stuur een mail aan:

Silvia Hoogvorst, hoogvorst.s@hsleiden.nl

Voor verdere vragen over de master thesis opdracht, kun je contact opnemen met:
Thomas Jaarsma, t.jaarsma@uu.nl

Als je mee wilt doen aan het onderzoek, **vul dan de toestemmingsverklaring in.**

Met vriendelijke groet,

Silvia Hoogvorst

TOESTEMMINGSVERKLARING
voor deelname aan het wetenschappelijk onderzoek:

Developing Student feedback literacy Through Educational Activities

Ik heb uitleg gekregen over het onderzoek. De informatie over het onderzoek heb ik goed gelezen. Ik heb mijn eventuele vragen over het onderzoek gesteld. Ik heb goed nagedacht of ik aan het onderzoek wil deelnemen. Ik mag op ieder moment stoppen met het onderzoek als ik dat wil. Ik hoef niet uit te leggen waarom ik wil stoppen.

Ik doe wel mee aan het onderzoek

Ik doe niet mee aan het onderzoek

Zet hiernaast een kruisje in het vakje dat voor jou van toepassing is
--

Naam :

School :

Klas :

Geboortedatum :

Datum :

Handtekening :

Als je informatie wilt ontvangen over de uitkomsten van het onderzoek, vul dan hier je e-mailadres in: