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To cite this article: Martijn Leenknecht, Priscilla Hompus & Marieke van der Schaaf (2019) Feedback seeking behaviour in higher education: the association with students' goal orientation and deep learning approach, *Assessment & Evaluation in Higher Education*, 44:7, 1069-1078, DOI: [10.1080/02602938.2019.1571161](https://doi.org/10.1080/02602938.2019.1571161)

To link to this article: <https://doi.org/10.1080/02602938.2019.1571161>



Published online: 09 Feb 2019.



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Feedback seeking behaviour in higher education: the association with students' goal orientation and deep learning approach

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ABSTRACT

To make sure that feedback fulfils its aspirations, students' active role in feedback should be acknowledged in higher education: It is students' uptake of feedback that determines its effectiveness. In this study, feedback seeking behaviour of students is introduced in order to enrich our knowledge about students' active role in feedback. Goal orientation was studied as antecedent of feedback seeking behaviour, and students' deep learning approach as a mediating factor. Results indicated that students use both monitoring and inquiry strategies of feedback seeking, but they preferred monitoring. The association between feedback seeking behaviour and goal orientation was stronger for mastery goals than for performance goals. The preference for monitoring is stronger for students with more performance goal orientation. Deep learning approach was found to be a mediator in the relationship between goal orientation and feedback seeking behaviour. It can be concluded that students with the goal to learn from the activity will use more deep learning strategies and will seek more feedback, both in an active and passive way. This effect is less present for students with performance goals.

KEYWORDS

Feedback seeking behaviour; goal orientation; deep learning

Students' active role in feedback

Feedback is seen as a powerful tool to promote students' learning in higher education (Hattie and Timperley 2007). However, whether feedback fulfils its aspirations depends on students' interpretations and perceptions towards feedback (Boud and Molloy 2013). It is important to recognise and understand the crucial role of students in feedback processes (Carless and Boud 2018). After all, students are not passive recipients of information about their actual performance and how to improve, they are active agents who construct their own understanding and meaning of and response to feedback (Havnes and McDowell 2013). It is their uptake (or not) of feedback that determines the effectiveness of feedback.

Carless and Boud (2018) argue that a lack of adequate levels of students' feedback literacy is a barrier for feedback effectiveness in higher education nowadays, and they call for more attention on promoting feedback literacy of students. Feedback literacy is the ability to receive, interpret and use feedback for learning (Sutton 2012). This requires appreciation of feedback, the ability to make appropriate evaluative judgements, effective management of affect and active

involvement of students. To obtain more insight into students' active role in feedback processes and students' feedback literacy, we can learn from research in the fields of management and human resources where *feedback seeking behaviour* has been studied extensively (e.g. Anseel et al. 2015; Ashford 1986). Feedback seeking behaviour is defined as purposely seeking information about one's own level of performance, interpreting it, and applying it in order to reach one's goals (Anseel et al. 2015). An individual can seek feedback by directly asking for feedback, i.e. *inquiry*, or by observations and deduction of information from his or her surroundings, i.e. *monitoring* (Ashford, Blatt, and VandeWalle 2003).

Goal orientation: antecedent of feedback seeking behaviour

Individual differences in feedback seeking behaviour between students manifest in their methods used, e.g. *inquiry* or *monitoring*, as well as in timing and the type of feedback information that is sought, e.g. self-improvement information or self-validation information (Janssen and Prins 2007). VandeWalle (2003) proposed that there are individual differences in goal orientation that result in differences in feedback seeking behaviour. Several studies have confirmed this assumption and found that a person's goal orientation is an important antecedent of the person's feedback seeking behaviour (e.g. Crommelinck and Anseel 2013; Janssen and Prins 2007; Tuckey, Brewer, and Williamson 2002; VandeWalle et al. 2000).

Goal orientation is the reason or purpose why a person is involved in tasks (Dweck and Leggett 1988; Pintrich 2000; Ross, Blackburn, and Forbes 2005). VandeWalle (2003) brings forward two kinds of personal goal orientation that influence a person's feedback seeking behaviour: learning goal orientation and performance goal orientation. A *learning* or *mastery orientation* indicates that the person is involved because he or she wants to learn from the task, and a *performance orientation* means that the person wants to demonstrate ability by involvement in the task (Pintrich 2000). Both mastery and performance orientations can occur in an approach or avoidance state (see Elliot, Murayama, and Pekrun 2011; Senke, Hulleman, and Harackiewicz 2011 for more elaboration on achievement goal theory). A person can have both mastery and performance goals for a task, but the extent to which a person strives for mastery and performance goals depends on the situation (Latham and Locke 1991).

Students with a mastery goal orientation recognise the instrumental value of feedback and are seeking for self-improvement information (Janssen and Prins 2007). Those students do not fear failure as they recognise this as useful feedback and they interpret negative feedback as an invitation to improve and an opportunity to learn (Crommelinck and Anseel 2013; Elliot and McGregor 2001; Elliot and Mapes 2005; Noordzij et al. 2013). In order to learn, students with a mastery goal orientation can show feedback seeking behaviour and use *inquiry* as a strategy to receive more valuable and precise feedback (VandeWalle 2003). For those students feedback seeking behaviour can be helpful to further their development, as feedback seeking permits students to be 'in control' of their own learning and it enables students to better adapt to (new) social (work) environments (Anseel, Lievens, and Levy 2007; Crommelinck and Anseel 2013).

Using *inquiry* has higher self-presentation costs compared to *monitoring* (Anseel et al. 2015; Park et al. 2007). When asking for feedback, the person probably unmask his or her uncertainty or points attention to personal shortcomings, which both are threats for a person's self-presentation (Park et al. 2007). For that reason, students with a performance goal orientation are less willing to seek feedback, as feedback is a possible threat for their demonstration of ability (Tuckey, Brewer, and Williamson 2002) and to their image or ego (Crommelinck and Anseel 2013). Moreover, they prefer *monitoring* instead of *inquiry* feedback seeking behaviour when they anticipate potential negative feedback (VandeWalle 2003). According to Williams and Johnson (2000) *monitoring* could result in inaccurate and incomplete feedback, as it depends on the individual's ability to deduce the right information from the observations. This is less problematic for

students with a performance goal orientation, as they pay more attention to the impression management value of feedback and are seeking for self-validation information (Janssen and Prins 2007; Janssen and Van der Vegt 2011). When they anticipate potential positive feedback, they probably prefer *inquiry* to seek feedback (Janssen and Prins 2007).

Feedback seeking and deep learning

Mastery goal orientation, and to a less extend performance approach goal orientation, is associated with more (meta-)cognitive strategy use (Wolters 2004) and a deep learning approach (Elliot and McGregor 2001; Fenollar, Román, and Cuestas 2007; Liem Lau, and Nie 2008; Phan 2013). This is not surprising as students who study with a deep learning approach, adopt meta-cognitive strategies in order to understand and construct meaning (Biggs 1999; Filius et al. 2018). They link new information to prior knowledge and they evaluate the (new) information critically (Akyol and Garrison 2011). The opposite of a deep learning approach is surface learning (Biggs 1999). Surface learning is more externally focused on recalling and memorising isolated information (Filius et al. 2018). Surface learning is seen as a less effective learning approach, especially in complex learning environments like higher education (Geitz, Joosten-Ten Brinke, and Kirschner 2015).

Active involvement of students with feedback seems to be associated with a deep learning approach. Geitz and colleagues (2015) found that students who were introduced to an activating feedback intervention were more likely to adopt deep learning strategies, especially when they had a mastery or a performance approach goal orientation. The same pattern was found by Filius and colleagues (2018), who studied a peer feedback intervention in a small private online course. Students in the intervention perceived high levels of critical thinking and deep learning, and reported asking for and providing feedback to each other. In other words, adopting a deep learning approach includes more feedback seeking.

Current study

This study aims to provide insight into students' feedback seeking behaviour and their antecedents. It is crucial to understand how and under what conditions students are seeking feedback and self-regulate their learning from feedback, in order to promote feedback effectiveness. In the current study, goal orientation and deep learning are studied as possible antecedents of feedback seeking behaviour in a higher educational context. Given the association between feedback involvement and deep learning approach, the mediating role of deep learning approach of students in the association between goal orientation and feedback seeking behaviour is explored. Our central research question is: *To what extent can the intensity of students' feedback seeking behaviour be explained by students' goal orientation and deep learning approach?*

Method

Participants

In total, 80 first year students (89%) from a Dutch University of Applied Sciences participated in this study. The university was selected on elements of a feedback-friendly culture (London and Smither 2002), i.e. an existing balance between formal and informal feedback, positive orientations towards feedback, and a focus on continuous learning and development. All students were enrolled in the same educational program and gave informed consent for participation. Average age of the students was 20.1 years old ($SD = 2.17$) and 60% were female.

Procedure

The educational program was a mix of knowledge-driven lectures with a project-based assignment. Students were working on an 8 weeks project in small groups. Eighty percent of the students worked in groups of five, whilst 5% worked in groups of three and 15% in groups of four students. In week 7, students were asked to fill out a questionnaire about their experiences during the project. Students were free to choose a paper-and-pencil version (76%) or an online equivalent (using Qualtrics software). The paper-and-pencil and online questionnaire were exactly the same and in Dutch. Students were asked to reflect on their goal orientation, deep learning approach and feedback seeking behaviour during the project.

Measures

Feedback seeking behaviour

Students' self-perception of their feedback seeking behaviour was measured with the *Feedback Seeking Scale* (Williams and Johnson 2000). This scale consisted of two subscales: inquiry (six items) and monitoring (five items). An example item for the inquiry subscale is: 'How often did you ask peers how well you performed during the project?' An example item for the monitoring subscale is: 'How often did you pay attention to what your teacher said about how well you performed during the project?' Students indicated how often they showed the described behaviour on a 6-point Likert scale, ranging from 1 never to 6 always. Reliability of the scale was sufficient to good (Cronbach's $\alpha_{\text{inquiry}}=0.87$; Cronbach's $\alpha_{\text{monitoring}}=0.77$).

Goal orientation

Students' performance and mastery goal orientation were measured with the *Achievement Goals Questionnaire*, developed by Elliot and McGregor (2001) and successfully used in the Dutch context by Geitz, Joosten-Ten Brinke, and Kirschner (2016). In line with VandeWalle's (2003) goal orientation model of feedback seeking behaviour, no distinction was made between approach and avoidance goals. Students reflected on their goal orientation during the project on a 7-point Likert scale, ranging from 1 completely not applicable to 7 completely applicable. An example item for mastery goal orientation was: 'It is important for me to understand the content related to this project as thoroughly as possible'. All mastery goal orientation items were task-based, not self-based (see Elliot, Murayama, and Pekrun 2011). An example item for performance goal orientation was: 'My goal in this project was to get a better grade than most of the other students'. The performance goal orientation items were mainly about normative goals, not appearance goals (see Senke, Hulleman, and Harackiewicz 2011). Measurement of the mastery (Cronbach's $\alpha=0.82$) and performance (Cronbach's $\alpha=0.74$) scales proved to be reliable in this study.

Deep learning approach

The applied version of the *revised two-factor Study Process Questionnaire* (Biggs, Kember, and Leung 2001) by Geitz and colleagues (2016) was used to measure students' learning approach. Although the complete questionnaire, with both the deep learning and surface learning subscales, was filled out by students, only the deep learning subscale was used in the current study. This was done to prevent invalidity of the questionnaire by unilateral questioning (i.e. affecting students' perceptions by limiting the scope of the questionnaire).

The scale consisted of 10 items about deep learning approach and 10 items about surface learning approach. Students' indicated to what extent the items were applicable to their situation on a 7-point Likert scale, ranging from 1 completely not applicable to 7 completely applicable. An example item was: 'I find that at times engaging in the project gives me a feeling of deep personal satisfaction'. Reliability of the deep learning subscale was good (Cronbach's $\alpha=0.89$).

Table 1. Descriptive statistics of feedback seeking behaviour, goal orientation and learning approach.

		<i>N</i>	<i>M</i>	<i>SD</i>	Possible range
Feedback Seeking Behaviour	Inquiry	80	2.84	0.83	1–6
	Monitoring	80	3.50	0.84	1–6
Goal Orientation	Mastery	80	3.80	0.99	1–7
	Performance	80	3.77	0.96	1–7
Learning Approach	Deep Learning	80	3.93	0.90	1–7

Pilot

The questionnaires were pre-tested in a pilot with second year students ($n=48$). The context relevance of the items was evaluated. The pilot resulted in reformulation of two items of the Feedback Seeking Scale, two items of the Goal Orientations Scale and five items of the Learning Approach Scale.

Analyses

All scores were standardised prior to analyses, as the scales used different Likert scales. Four mediation models were tested using Baron and Kenny's (1986) stepwise approach: (1) mastery goal orientation, deep learning, inquiry; (2) mastery goal orientation, deep learning, monitoring; (3) performance goal orientation, deep learning, inquiry; and (4) performance goal orientation, deep learning, monitoring. For each mediation model, a set of four linear regression analyses was conducted.

Results

Descriptive statistics

Students' applied significantly more monitoring than inquiry, $t(79)=-8.14$, $p<.001$, Cohen's $d=0.91$. Descriptive statistics are presented in Table 1. All variables were significantly positively correlated (see Table 2).

Mediation model

To test whether deep learning is a mediator in the relation between goal orientation and feedback seeking behaviour, three consecutive steps in analysis were made (following Baron and Kenny 1986; see Figure 1).

STEP A: goal orientation and deep learning

Both mastery goal orientation ($\beta=0.63$, $p<.01$, $\Delta R^2=0.39$) and performance goal orientation ($\beta=0.47$, $p<.01$, $\Delta R^2=0.21$) significantly predicted students' deep learning approach (see Table 3). When considering the shared variance between mastery and performance goal orientation, and when testing an interaction effect of the two, it turned out that mastery goal orientation was the only significant predictor of deep learning approach (see models 2 and 3 in Table 3).

STEP B: deep learning and feedback seeking behaviour

Deep learning was a significant predictor of inquiry feedback seeking behaviour ($\beta=0.52$, $p<.01$, $\Delta R^2=0.26$) as well as monitoring feedback seeking behaviour ($\beta=0.56$, $p<.01$, $\Delta R^2=0.30$).

Table 2. Correlations between the feedback seeking behaviour, goal orientation and learning approach.

		1	2	3	4
Feedback Seeking Behaviour	1. Inquiry				
	2. Monitoring	0.63**			
Goal Orientation	3. Mastery	0.44**	0.44**		
	4. Performance	0.29**	0.36**	0.54**	
Learning Approach	5. Deep Learning	0.52**	0.56**	0.63**	0.47**

* $p < .05$, ** $p < .01$.

Note. $N = 80$

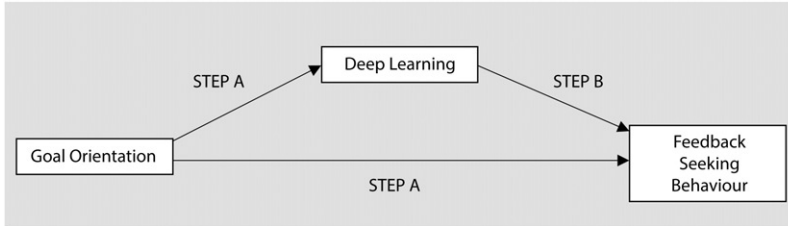


Figure 1. Mediation model and consecutive steps of analyses.

Table 3. Regression analyses goal orientation on deep learning.

Model		Deep learning		
		ΔR^2	SE	β
1A	Mastery	0.39	0.09	0.63**
1B	Performance	0.21	0.10	0.47**
2	Mastery	0.40	0.11	0.53**
	Performance		0.10	0.18
3	Mastery	0.40	0.11	0.54**
	Performance		0.11	0.19
	Mastery x Performance		0.08	-0.04

* $p < .05$, ** $p < .01$.

Note. $N = 80$

Table 4. Regression analyses goal orientation and deep learning on feedback seeking behaviour.

Model		Inquiry			Monitoring		
		ΔR^2	SE	β	ΔR^2	SE	β
1	Mastery	0.18	0.10	0.44**	0.18	0.10	0.44**
2	Mastery	0.27	0.12	0.19	0.31	0.12	0.15
	Deep Learning		0.12	0.40**		0.12	0.47**
3	Performance	0.08	0.11	0.29**	0.12	0.11	0.36**
4	Performance	0.26	0.11	0.07	0.31	0.13	0.13
	Deep Learning		0.11	0.49**		0.11	0.50**

* $p < .05$, ** $p < .01$.

Note. $N = 80$

STEP C: Deep learning as mediator for goal orientation on feedback seeking behaviour

Inquiry feedback seeking behaviour was significantly predicted by mastery goal orientation ($\beta = 0.44$, $p < .01$, $\Delta R^2 = 0.18$) and performance goal orientation ($\beta = 0.29$, $p < .01$, $\Delta R^2 = 0.08$). For both predictors deep learning functioned as full mediator (see Table 4). The same patterns were found for monitoring.

Discussion

The current study aimed to research students' feedback seeking behaviour in higher education with a focus on the relationship between students' goal orientation, deep learning approach and

self-reported feedback seeking behaviour. The central research question was: *To what extent can the intensity of students' feedback seeking behaviour be explained by students' goal orientation and deep learning approach?*

Students in our sample used both monitoring and inquiry to actively seek feedback during project work. They preferred monitoring and reported significantly more use of monitoring compared to inquiry. This means that students during group work observed what others were doing or deduced feedback information from interactions with others (monitoring), rather than actively formulated feedback questions to their peers or teacher (inquiry). Although we found a preference for monitoring, the correlations between inquiry and monitoring showed that when students were more willing to seek feedback, they used both feedback seeking methods more.

That students seek feedback and use both inquiry and monitoring is not surprising, as the study was conducted in a feedback-friendly culture. Baker et al. (2013) pointed out that individuals are more willing to seek and make use of feedback in organisations with a feedback-friendly culture. The preference for monitoring could be explained by the kind of assignment the students were working on. A project-based group assignment results in more group discussions about the assignment and criteria, planning and deliberating about division of work, and monitoring how the individual tasks and group assignment is progressing. Individual reflection on misconceptions or the desire to verify the level of understanding and performance, for which inquiry could be used, is probably less prevalent in group work.

Mastery goal orientation explained more variance of inquiry and monitoring than performance goal orientation, and performance goal orientation explained less variance of inquiry compared to monitoring. In other words, the preference for monitoring is stronger for students with more performance goal orientation. These findings are in line with previous studies, which indicated that students with performance goals prefer monitoring instead of inquiry (VandeWalle 2003) due to the self-representation costs (Crommelinck and Anseel 2013; Tuckey, Brewer, and Williamson 2002).

Feedback seeking behaviour could also be predicted by the level of deep learning approach. Moreover, deep learning approach was found to be a mediator in the relationship between goal orientation and feedback seeking behaviour. This means that students with mastery goal orientation are more likely to adopt a deep learning approach and seek feedback, both using inquiry and monitoring. The same holds for performance goals. Students with a performance goal orientation are more likely to adopt a deep learning approach and seek feedback. These results are in line with the study by Geitz and colleagues (2015), who found that both mastery goal orientation and performance approach goals lead to more deep learning, especially when students were actively involved with feedback. However, it is surprising that the same pattern is found for mastery and performance goal orientation, as we also found that students with more performance goal orientation tended to be more cautious in their feedback seeking behaviour and preferred monitoring instead of inquiry.

That the same pattern is found between mastery goal orientation, deep learning and feedback seeking behaviour and performance goal orientation, deep learning and feedback seeking behaviour, can be explained by the high correlation between mastery goal orientation and performance goal orientation. Students with performance goals also have mastery goals, whilst students with less performance goals have less mastery goals as well. This high correlation affects the results, as is nicely demonstrated in the regression analyses of goal orientation on deep learning. The effect of performance goal orientation vanished when mastery goal orientation was included in the analysis. This means that not the performance goal orientation, but the mastery goal orientation, determines the level of deep learning. Students who want to learn from the project-based assignment, make more use of meta-cognitive strategies and, by doing so, show more feedback seeking behaviour.

The current study has some limitations. The relationship between goal orientation, deep learning approach and feedback seeking behaviour was studied in one specific situation. It is unclear if the results are applicable to a situation with a less feedback-friendly culture. Students in the

current study were used to getting a lot of feedback, which made them probably less restrained to ask for feedback.

Probably the results would be more precise and easier to interpret if students' goal orientations were included. Adding the dimension of avoidance-approach into the students' self-reported goal orientation could make the distinction between goal orientations clearer, which could result in different patterns between goal orientation, deep learning approach and feedback seeking behaviour.

Nevertheless, our results legitimise the conclusion that in a feedback-friendly higher educational context students' mastery goal orientation predicts students feedback seeking behaviour, and that this effect is mediated by students deep learning approach. The construct of feedback seeking behaviour is applicable in higher education and we can learn from previous research done to feedback seeking behaviour in the professional context.

A suggestion for further research is to study feedback seeking behaviour in higher education in more detail by considering aspects like frequency and timing of feedback seeking behaviour between persons and situations. Moreover, the impact of group members and their goal orientation and deep learning approach could be interesting to consider. It may be questioned whether group members influence each other's goal orientation and deep learning approach and consequently their feedback seeking behaviour. Besides a reciprocal influence, it is possible that feedback seeking behaviour is distinguishable both at a group and a personal level. Students can seek feedback about their own level of performance, or they can seek feedback in the name of the group in order to get information about the level of group performance.

It may be worthwhile to close the feedback loop and take feedback uptake into account in future research. Previous studies have demonstrated the differentiated response to feedback valence between students with mastery goal orientation and students with performance goal orientation (e.g. Elliot and Mapes 2005; Elliot and McGregor 2001). Those mechanisms were not taken into account in the current study, as the characteristics of the found feedback were not considered. It may be worthwhile to do so in further research. Moreover, studies of feedback seeking behaviour can boost our knowledge about feedback uptake by students and can provide us with starting points in our search for instruments to promote students' feedback literacy (Carless and Boud 2018). To fully make use of this potential, we recommend studies which combine feedback seeking behaviour and feedback uptake.

The current study showed that when teachers want to stimulate or support students' feedback seeking behaviour, they should promote a mastery goal orientation. Students with the goal to learn from the activity will use more deep learning strategies and will seek more feedback, both in an active and passive way. This effect on feedback seeking behaviour is less present when students have only performance goals.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Priscilla Hompus is a multi-disciplinary lecturer at the Facility Management Department of Rotterdam University of Applied Sciences. She completed her master's degree in Educational Sciences at Utrecht University, focusing on feedback seeking behaviour in higher education. In her work she finds it important to stimulate feedback seeking behavior of learners and tries to incorporate this into the curriculum where and whenever she can.

Marieke van der Schaaf is full professor of Research and Development in Health Professions Education and Director of the Center for Research and Development of Education at University Medical Center Utrecht. She is the former director of the master programme Educational Sciences at Utrecht University and led several research projects on educational innovations and performance assessments. Her research focuses on (becoming) professionals' learning by means of feedback.

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