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Feedback during active learning: elementary school teachers' beliefs and perceived problems

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Giving feedback during active learning is an important, though difficult, task for teachers. In the present study, the problems elementary school teachers perceive and the beliefs they hold regarding this task were investigated. It appeared that teachers believe conditional teacher skills, especially time management, hinder them most from giving good feedback. The most widely held belief was that “feedback should be positive”. Teachers also believed that it is important to adopt a facilitative way of giving feedback, but they found this difficult to implement. Only some teachers believed goal-directedness and a focus on student meta-cognition were important during active learning and teachers did not perceive problems regarding these aspects. It was discussed whether teachers' feedback behaviour was in line with these perceived problems and beliefs. The results give directions for the professional development of teachers to improve their feedback during active learning.

Keywords: feedback; active learning; elementary school teachers; teacher beliefs; teachers' perceived problems

1. Introduction

Feedback is one of the most powerful tools teachers can use to enhance student learning and achievement (Hattie 2009). Giving feedback in an active learning context, however, is a difficult task for teachers. In active learning environments, learning is an active process of constructing knowledge. Teaching is a process of supporting the students' knowledge construction, referred to as process-oriented teaching (Duffy and Cunningham 1996). Bolhuis and Voeten (2001) concluded from their observations of process-oriented teaching that teachers give little positive feedback on learning and scarcely pay attention to learning goals. Sol and Stokking (2009) found that teachers give little feedback to promote self-directed learning, but instead answer students' questions. The observation study that preceded the present study revealed similar problems: elementary school teachers rarely relate their feedback explicitly to learning goals, give very little feedback that is focused on enhancing students' meta-cognition or social learning and they control rather than facilitate student learning (Van den Bergh, Ros, and Beijaard 2012). It is not known what problems teachers themselves perceive or what they believe to be important

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when giving feedback during active learning. It is known, however, that beliefs strongly influence teachers' perceptions and subsequently affect their behaviour (Pajares 1992). Therefore, it seems important to know the beliefs teachers hold regarding feedback during active learning, and the problems they perceive.

The aim of the present study was to advance our understanding of teacher feedback during active learning. For this purpose, teachers' beliefs about (giving) feedback during active learning – and the problems teachers perceive – in the highest grades of elementary schools were investigated. The findings are discussed in relation to teachers' feedback behaviour that was observed in the preceding study of teachers' feedback practices. Before presenting the study, we will first elaborate on teacher feedback in the context of active learning and how beliefs and perceived problems may relate to teachers' feedback behaviour.

2. Theoretical background

2.1. Teacher feedback during active learning

Feedback is defined as specific information about the comparison between a student's observed performance and a standard, given with the intent to improve the student's performance (Van de Ridder, Stokking, McGaghie, and Ten Cate 2008). The standard to which a student's performance is compared is formulated in the learning goals, which should be clear, since feedback is an essential information about how the student's present performance relates to them (Nicol and Macfarlane-Dick 2006). Hattie and Timperley (2007) concur with this definition. They state that to improve student learning, feedback must answer three questions; "Where am I going?" "How am I going?" and "Where to next?" Students should know the learning goals, how their current performance relates to these goals and how to proceed. So, the *goal-directedness* of feedback appears to be an important facet of feedback.

The *focus* of feedback can pertain to different levels: the task level, the process level, the self-regulation level and the self level (Hattie and Timperley 2007). Feedback focused at the task level contains information about how well the task is being performed. Feedback focused at the process level is about information processing and the learning processes needed to understand the task. Feedback that is focused at the self-regulation or meta-cognitive level refers to feedback regarding the self-regulatory activities by which students "learn to learn", such as orientation and planning of the task, monitoring progress during the task and evaluation and reflection afterwards (De Jager, Jansen, and Reezi 2005). Finally, feedback focused at the self level is defined as personal feedback, unrelated to specifics of the task (Hattie and Timperley 2007).

Of these four foci of feedback, feedback at the self-regulation level seems especially important in the context of active learning. Active learning may range from self-directed learning in which students take decisions on goals and activities, to independent learning in which the goals and activities are decided on by the teacher, but several mental activities are required of the students such as figuring things out on their own (Van Hout-Wolters, Simons, and Volet 2000). In either case, developing students' meta-cognition is an objective of active learning as well as a means for them to learn actively (Bonwell and Eison 1991; Simons, van der Linden, and Duffy 2000).

Another important focus of feedback during active learning is social learning. The principles of active learning draw on the social constructivist learning theory

which postulates that students have to construct their own knowledge in interaction with the social learning environment. Students learn actively with their peers in small groups and, thus, need instruction and feedback on cooperative learning skills and social skills (Bolhuis and Voeten 2001). In the context of active learning, social learning, therefore, comprises an additional level at which feedback can be focused.

With regard to the *nature* of feedback, teachers emphasise the idea that feedback has to be positive; teachers hardly discuss the parts of students' work which are poor (Sol and Stokking 2009). Besides confirmation of good work, however, feedback has to contain constructive criticism; it should contain hints for improving the weaker parts of the work (Nicol and Macfarlane-Dick 2006).

The *way* in which feedback is given by the teacher can be directive or facilitative. Directive feedback tells the student what needs to be revised and how, while facilitative feedback provides the student with suggestions that students can use in their own revision of their work (Black and Wiliam 1998). The active learning context asks for facilitative feedback, since it is the teachers' task to support the students' knowledge construction (Duffy and Cunningham 1996).

Regardless of the focus, nature and way of (giving) feedback, it has to be *adaptive* to the needs of the individual student. As early as 1976, Wood, Bruner and Ross stated that a teacher cannot generate appropriate feedback without sufficient knowledge about the task at hand and about the performance characteristics of the student. Based upon this information about the learner combined with the desired outcomes, teachers can formulate adaptive feedback (Shute 2008).

Finally, to be able to provide students with feedback during active learning, some *teacher skills* are *conditional*. To create the conditions for active learning, the teachers need classroom management skills. Classroom management refers to the actions taken by the teacher to create and maintain a learning environment in which instruction and the provision of feedback can successfully take place (Brophy 2006). The teacher has to arrange the learning environment and maintain established rules and procedures.

To summarise, the *focus*, the *goal-directedness* and the *nature* of feedback, the *way* of giving feedback, the *adaptiveness* of feedback and the *conditional teacher skills* for giving feedback in an active learning environment seem important facets of teacher feedback during active learning. Teacher behaviours were observed and related to these six facets in a preceding observation study (Van den Bergh et al. 2012). A clarification of each of the six facets, and the main findings, are summarised in Table 1.

When comparing teachers' feedback behaviour to the notions in the literature on feedback and active learning, it appears that teachers' feedback behaviour is not optimal for supporting students' active learning. The reasons for these suboptimal feedback practices are not yet clear. It is known that beliefs strongly influence teachers' perceptions and that these subsequently affect their behaviour (Pajares 1992). Therefore, the beliefs teachers hold regarding feedback during active learning, and the problems they perceive, are the focus of the present study.

2.2. Teachers' beliefs and perceived problems

All teachers hold beliefs about their work, their roles and their responsibilities. Beliefs are often seen as the filters through which knowledge is acquired (Borko and Putnam 1996). Beliefs are formed throughout teachers' lives, schooling and

Table 1. Facets of teacher feedback during active learning and findings regarding teachers' feedback behaviour (Van den Bergh et al. 2012).

Facet	Clarification	Teachers' feedback behaviour
Focus	The level at which feedback is focused: task, process, metacognition, social learning or self /non-specific	The feedback interactions were most often focused on the task or process and seldom on meta-cognition or social learning
Goal-relatedness	Whether or not feedback is related to a learning goal	About 5% of the feedback interactions were explicitly related to a learning goal
Nature	The nature of feedback: confirmative, critical and/or constructive	The nature was most often constructive, neutral or confirmative
Way	The way of giving feedback: directive or facilitative	The way of giving feedback was most often directive
Adaptiveness	Acquiring the diagnostic information to base the feedback on	In about 15% of the interactions teachers acquired diagnostic information
Conditional teacher skills	Classroom management skills; arranging materials, maintaining rules and procedures	About one-third of the interactions were related to the conditions for active learning

careers and strongly influence perception and, in turn, behaviour (Pajares 1992). In the context of elementary education, this relationship between beliefs and behaviour was shown in a study on computer use. Elementary school teachers' beliefs were shown to have a significant effect on the use of computers in the classroom. Teachers who adopted more constructivist beliefs appeared to use more computers in the classroom compared to teachers who held more traditional beliefs. (Hermans et al. 2008). Presumably, the beliefs about (giving) feedback during active learning will also influence the feedback practices of elementary school teachers.

Teachers' beliefs about giving feedback in the context of active learning need to fit the active learning situation. Teachers should emphasise the development of student skills more than they stress the transmission of information (Bonwell and Eison 1991). Teachers should motivate students to construct their own knowledge on the basis of learning experiences such as experimenting and reflecting (Boekaerts 1997). From observations and interviews, Niemi (2002) concluded that secondary school teachers perceive active learning as harder and requiring much more work than traditional teaching. Teachers appear to lack the necessary knowledge about active learning to implement it successfully. This lack of knowledge, as well as the problems teachers perceived, led to the observation that few teachers implement active learning environments that really require students' own planning, elaboration and self-evaluation (Niemi 2002). Similar findings are more recently reported for elementary schools in Scotland (Stephen, Ellis, and Martlew 2010) and in Australia (Van Deur 2010). So, investigating teachers' beliefs and perceived problems seems useful in order to understand their classroom practices.

2.3. *The present study*

The purpose of the present study was to contribute to the knowledge of teacher feedback in the context of active learning via an examination of elementary school

teachers' beliefs and of the problems they perceive. The following research questions guided this study:

- (1) What beliefs do elementary school teachers hold with regard to feedback during active learning?
- (2) What are the main problems elementary school teachers perceive with regard to feedback during active learning?

To frame teachers' beliefs and perceived problems, we distinguished six facets that were prominent in the literature about teacher feedback and active learning. These facets are: the focus of feedback, the goal-directedness of feedback, the nature of feedback, the way of giving feedback, the adaptiveness of feedback and the conditional teacher skills (see Table 1). Results of the present study will be discussed in relation to the findings concerning teachers' feedback behaviour with regard to these six facets (Van den Bergh et al. 2012).

3. Method

3.1. Participants

The participants were 33 teachers (28 females and 5 males) who worked in the sixth, seventh or eighth grade at 13 elementary schools in the south-east of the Netherlands. All teachers practised the concept of active learning when teaching environmental studies (i.e. projects that integrate subjects such as history, geography and biology). Their average teaching experience was 12.18 years ($SD=11.93$), their average experience with active learning was 3.98 years ($SD=4.10$). All teachers also participated in the observation study (Van den Bergh et al. 2012).

During active learning, students worked on their own projects on a particular theme. For example, on the theme "The Middle Ages" groups of two or three students elaborated on different topics, such as fraternities or knights, by searching for information and preparing a presentation for their classmates. The teachers walked around to help the students.

3.2. Procedure

We sent emails to principals of elementary schools asking them to indicate whether the concept of active learning in the domain of environmental studies was practised in their schools and, if so, whether (some of) the teachers of grades 6, 7 or 8 were interested in participating in the study. Those principals who answered positively were contacted. For the teachers who agreed to participate, email addresses were requested, and an appointment to administer a writing task and an interview was made.

3.3. Measures

Teacher beliefs were assessed using a writing task. Teachers were given a white sheet with the word "Feedback" in the middle. The following instruction was given: "Write down all the things you think about regarding the questions: 'What is feedback?' and 'What do you find important when giving feedback?'" Only think about situations where students learn actively in the domain of environmental studies".

Subsequently, teachers gave a verbal explanation. Clarification and elaboration were elicited by questions such as “What do you mean by ...?” These verbal explanations were recorded using a voice recorder.

Perceived problems were investigated in an open interview that was initiated by the question: “What do you find difficult about giving feedback during an environmental studies lesson in which students learn actively?” Such an open question allowed the teachers to answer from their own frame of reference. Elaborations were elicited by asking questions such as “Can you explain that?” or “Can you give an example?” The interviews were recorded using a voice recorder.

3.4. Data analysis

3.4.1. Beliefs

The concepts that teachers wrote down were inserted as variables in SPSS. Concepts that shared meaning were grouped: for example, “coaching” and “guiding” were merged. This yielded a set of 30 beliefs that were scored as “not mentioned” (0) or “mentioned” (1). The verbal explanations teachers gave were transcribed. The correctness of the scores was checked using these transcriptions. Cohen’s Kappa for the coding of these 30 beliefs, based on 18% of the data, was 0.89. Interrater agreement for relating the beliefs to the six facets of giving feedback during active learning was 91%.

3.4.2. Perceived problems

The interviews were transcribed. All problems that were mentioned were inserted as variables in SPSS. This yielded a set of 16 problems that were scored as “not mentioned” (0) or “mentioned” (1). Cohen’s Kappa for the coding of the perceived problems, based on 18% of the data, was 0.88. Full interrater agreement was reached for relating the problems to the six facets of giving feedback during active learning.

4. Results

4.1. Teachers’ beliefs about feedback during active learning

On an average, teachers revealed 8.24 (a minimum of 5, and a maximum of 13) different beliefs. Beliefs mentioned by more than three teachers, and the number of teachers who expressed them can be found in Table 2.

The belief that was held most widely by these teachers is related to *the nature of feedback*: feedback should be positive. Also, criticism should be given in a positive way. The second most held belief was related to the *way of giving feedback*: teachers thought that feedback should activate and stimulate students’ work and thinking. Teachers believed it is important to provide students with hints and suggestions that stimulate and challenge them without telling them the answers. About half of the teachers believed that feedback should contain clear directions, and one-third believed that teachers should answer questions and give information. About a quarter of the teachers believed feedback should be *goal-directed*. Regarding the *focus of feedback*, teachers believed that feedback should be specific and clear and can have several foci; the content of the task, students’ social learning skills, processing of the task and meta-cognition. One-third of the teachers expressed the

Table 2. Teachers' beliefs about feedback during active learning ($N=33$ teachers).

Beliefs related to the six facets	Frequency
Focus of feedback	
Feedback can be focused on the task	12
Feedback can be focused on social learning	11
Teachers should prompt evaluation and reflection by students	8
Feedback can be focused on task processing	7
Feedback should be specific and clear	7
Feedback can be focused on student planning	4
Goal-directedness	
Feedback should be goal-directed	8
Nature of feedback	
Feedback should be positive	21
Criticism should be given positively	10
Feedback should contain criticism	7
Feedback should enhance student self-confidence	4
Way of giving feedback	
Students should be activated to work and think	20
Feedback should contain clear directions	17
Feedback should contain hints or suggestions	14
Teachers should answer questions and give information	11
Teachers should not tell the answers	10
Feedback should stimulate and challenge students	10
Teachers should ask questions	10
Feedback should contain an appraisal	8
Teachers should provide assistance, search for solutions	7
Teachers should coach and guide students	6
Adaptive feedback	
Feedback should be tuned to individual students	11
Teachers should assess student prior knowledge and needs first	6
Conditional teacher skills	
Teachers should check student work	8
For giving feedback, a good relationship is important	6
Feedback can be focused on keeping order and rules	4
Teachers should make sure students can proceed	4

belief that feedback should be *adaptive*. Regarding the *conditional teacher skills*, teachers believed that they should check student work, and they should establish good relationships with their students.

4.2. Problems teachers perceive with giving feedback during active learning

On an average, teachers mentioned 4.09 (a minimum of 1 and a maximum of 10) different problems. Problems mentioned by more than three teachers, and the number of teachers who mentioned each problem can be found in Table 3.

The main problems teachers perceived with giving feedback during active learning were related to the *conditional teacher skills*. More than half of the teachers felt they did not have enough time to give good feedback. One teacher said: "When I take time for one pair of students, the others will have to wait. They get impatient and so do I". Another teacher said: "You should give students time to think about your feedback, but there is too little time. It is very hard to organize it in a way that you can sit and discuss with them".

Table 3. Teachers' perceived problems with giving feedback during active learning ($N=33$ teachers).

Problem	Frequency
Focus of feedback	
Lack of students' conditional knowledge and skills	8
Goal-directedness of feedback	
Balancing compulsory subject matter and student initiatives is difficult	6
Nature of feedback	
Criticising student work is difficult	4
Way of giving feedback	
Asking the right questions to promote learning is difficult	12
Balancing directive and facilitative feedback is difficult	12
Being too much inclined to tell answers or to give straight directions	11
It is difficult to activate student thinking	6
Adaptive feedback	
Tuning feedback to individual students is difficult	9
Conditional teacher skills	
Lack of time	18
Classroom organisation of active learning is hard	16
Lack of content knowledge	10
Keeping the overview is difficult	9

General classroom organisation of active learning was perceived to be problematic by almost half of the teachers. As one teacher put it: "Everyone wants to work on a computer and that is not possible. I have too little computers". Another teacher stated that "The classroom has to be well organized, if the students cannot work independently, you cannot give good feedback. However, I find this quite difficult". Keeping the overview of what everyone is doing was perceived as problematic for over a quarter of the teachers: "Students work in the classroom, in the corridor and in the documentation centre; it is difficult to keep an overview over all these places". Another problem one-third of the teachers perceived with regard to the conditional teacher skills was their own lack of content knowledge to ask the right questions and to give adequate feedback: "Sometimes I do not have enough background knowledge of the topic. Then, I have to search for information together with the students, instead of being able to provide hints and suggestions in the right direction".

Teachers also experienced problems with regard to the *way of giving feedback*. They did not want to be too directive and tell the students the answers, but rather to facilitate student learning by asking questions and by activating student thinking. Teachers found this way of giving feedback difficult: "My first reaction is answering the students' question. I know I should ask questions that stimulate them to think. Still, I often give straight directions".

About a quarter of the teachers perceived problems with regard to the provision of *adaptive feedback*. Teachers who mentioned this problem all worked at a school in which students of different classrooms were mixed during active learning, so these teachers did not teach their own students. A teacher who was working in such a situation stated: "Adapting feedback to the needs of individual students is difficult, because every four weeks I teach different students. It is hard to know, for example, who needs a more directive approach and who does not". None of the

teachers who taught their own students during active learning perceived problems regarding the adaptiveness of feedback.

With regard to the *focus of feedback*, a problem that was perceived by a quarter of the teachers was the lack of conditional knowledge and skills on the part of the students. Feedback has to be focused on these conditional student skills, leaving less time for feedback that is focused on the actual learning task:

Excerpting information or writing it down in their own words is difficult for some students, but it is a conditional skill for this kind of work. Giving feedback on these kinds of thing prevents me from giving feedback on the actual subject matter.

With regard to the *goal-directedness of feedback*, the only problem some teachers perceived was on the balance between compulsory subject matter and student initiatives: “As a teacher, you have to teach all the compulsory subject matter, but how do you make sure students learn all this, without abolishing their own questions they want to answer in their projects?”

Finally, few teachers experienced problems with regard to the nature of feedback. The only problem here was criticising student work: “It’s hard to criticize student work in a positive, constructive way, so they do not feel it as negative feedback”.

5. Discussion

In a previous study, we observed and described elementary school teachers’ feedback practices during active learning (Van den Bergh et al. 2012). Suboptimal feedback behaviours were identified. In the present study, we sought explanations for these behaviours by comparing teachers’ beliefs, the problems they perceive and their classroom behaviours. The belief that feedback should be positive was held most strongly and teachers thought that feedback should activate and stimulate students’ work and thinking. Most problems with giving feedback during active learning mentioned by the teachers themselves are not related to feedback itself, but rather to the conditional teaching skills needed for active learning.

Problems such as time management, classroom organisation and keeping an overview over all students were reported as hindering teachers from providing feedback during active learning. Teachers reported few beliefs regarding the conditional teacher skills, but the problems teachers perceived may explain their feedback behaviour. About one-third of the teacher–student interactions consisted of teachers’ remarks concerning general classroom organisation such as telling students where material or other equipment could be found. These organisational issues kept teachers from giving feedback. It is known that working with cooperative groups requires specific classroom management strategies from the teacher, in addition to general classroom management skills (Emmer and Stough 2001). For example, besides establishing classroom routines, monitoring of students’ group behaviours is also necessary.

Problems directly related to giving feedback were mostly problems with the way feedback was given. Sixty per cent of the teachers held the belief that it is important that feedback activates students and stimulates their work and thinking. The beliefs and the perceived problems match up with the classroom behaviour. Teachers find themselves giving feedback in a rather directive way, although they do not want to be too directive. They want to facilitate student learning by asking

questions and by activating student thinking. Whereas difficulty with asking questions can stem from limited content knowledge (Neale, Smith, and Johnson 1990), teachers also indicated that lack of time is a reason for them just to answer students' questions and directly solve their problems. This problem may be partly related to the conditional time management skills. Additionally, this problem may relate to the shift in the teacher role that comes with active learning, from transmission of knowledge to guiding and coaching pupils' learning processes (Bolhuis and Voeten 2001). Teachers have much less control over learning in active learning environments than in traditional classroom situations (Boekaerts and Cascallar 2006). Teachers need to adapt their level of control to the degree of pupils' self-regulation of learning (Vermunt and Verloop 1999). Teachers seem insufficiently prepared for this role. Until recently, curricula of teacher education were more focused on the technical and instrumental skills of teaching and less on knowledge about pupil learning (Lidstone and Ammon 2002). The provision of process-oriented feedback is very different from the kind of feedback that teachers are trusted with. Learning to support active learning was not part of the educational programme many teachers received, and suitable refresher courses are not often available (Van Hout-Wolters, Simons, and Volet 2000). A lack of knowledge about learning processes and the role of the teacher in creating conditions that facilitate learning can leave teachers ill-equipped to make thoughtful, professional judgements about innovations in practice and how to realise their role (Stephen et al. 2010). Therefore, many teachers will lack sufficient knowledge and skills to guide their students in active learning, although teachers do indicate that they believe these new skills are important.

Another facet of feedback for which teachers' beliefs and perceived problems may explain their classroom behaviour is the nature of feedback. The belief that feedback should be positive was most prominent and teachers believe that when criticism has to be given, this should occur in a positive way. Teachers do find it difficult to criticise student work. They find it hard to address the weaker parts of student work, because they do not want the student to feel discouraged or insecure. Teachers appeared to give little criticism in their feedback behaviour. Very few interactions contained confirmation, criticism and a constructive remark, although this is the most favourable type of feedback for stimulating student learning (Nicol and Macfarlane-Dick 2006).

A facet of feedback during active learning that is neither believed to be important nor perceived as problematic is the goal-directedness of feedback. Just a quarter of the teachers expressed the belief that feedback had to be goal-directed and the only problem some teachers perceived was balancing between compulsory subject matter and student initiatives. Consequently, less than 5% of the observed feedback interactions were explicitly related to a learning goal, although this comprises a crucial element of the definition of feedback (e.g. Nicol and Macfarlane-Dick 2006; Hattie and Timperley 2007). Over a thousand studies in the behavioural sciences have shown that specific high goals effectively and significantly increase individuals' performance (Latham and Locke 2006). Although most teachers do not mention goals as being important and they do not experience problems regarding goal-setting, the lack of goal-related feedback in the classroom is problematic. When teachers want to improve their feedback behaviour, they should set clear learning goals, communicate these goals to their students and provide their students with feedback that explicitly relates their performance to these goals.

The belief that feedback can have several different foci was expressed by some teachers. The only problem with regard to the focus of feedback that teachers perceived was the need to focus on conditional knowledge and skills that students lack, instead of on the actual learning tasks. Although teachers do not perceive problems with regard to focusing feedback on student meta-cognition and on social learning, the fact that they provide their students with very little feedback on these two foci in their classrooms is problematic according to the literature on active learning. Meta-cognition is both an objective of active learning and a means to learn actively (Bonwell and Eison 1991; Simons, van der Linden, and Duffy 2000), and Hattie and Timperley (2007) showed that feedback that is focused on students' meta-cognition is effective at improving student learning. Therefore, teachers should focus more feedback on student meta-cognition, as well as on social learning.

5.1. Limitations and directions

Limitations of the present study may include the method we have used to measure teacher beliefs. Often teacher beliefs are measured using a validated questionnaire (e.g. Jenkins 2009). We aimed to identify what teachers think feedback is and what they find most important when giving feedback during active learning. We think we have achieved this by using the writing task and the additional explanation.

Despite this limitation, the present study shows that it is important to address teachers' own concerns and beliefs when studying an educational topic. For example, perceived problems with giving feedback during active learning were mainly related to conditional teacher skills. When studying the literature on feedback, researchers could overlook the importance of these conditions. On the other hand, the importance of clear learning goals is emphasised in the literature far more than in the classroom.

Since feedback is such a powerful tool to enhance student learning, it is important that teachers are able to give qualitatively good feedback. In the context of active learning, it is clear that giving feedback should be an important aspect of teachers' professional development. Current conceptions of teacher learning increasingly emphasise that teachers' own practice and knowledge of their practice should be taken as the starting point for professional learning. This seems a prerequisite in order for teachers to develop ownership of the content of learning and their learning processes (Day 1999). The present study provides clear indications for the development of a professional development programme aimed at improving feedback during active learning. This would incorporate realising the conditions for active learning, setting clear learning goals, focusing the feedback on the development of students' meta-cognition and social learning skills and adopting a more facilitative way of giving feedback.

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