

# Students' use of feedback in higher education: a literature review

## **Introduction**

This article reviews studies that have investigated how students' in higher education use information about their performance on assessment tasks, as provided through tutor feedback. Although acknowledged that feedback can also be provided by peers, the student herself, or computers – and that feedback from these other sources might even be more effective – this article focuses mainly on tutor feedback. The main reason for focusing on tutors' feedback is that feedback from the tutor is a major source of feedback for the students (in some places the only source), and it will probably be so for a time to come even if it is complemented or partly replaced with other sources of feedback.

Many authors have claimed that assessment might be the strongest of all factors when it comes to influencing students' studying strategies; affecting their effort, attention, motivation, and learning (e.g. Biggs, 1999; Brown, Bull, & Pendlebury, 1997; Struyven, Dochy, & Janssens, 2003). Still, research has shown that assessment is not always used systematically to support student learning (i.e. the formative purpose of assessment), but is all too often restricted to only measure student achievement in a summative manner, not providing adequate feedback to the students (e.g. Black & Wiliam, 1998). But in order to support student learning, feedback is of crucial importance, since the students need to be informed about their current performance if they are to perform better in the future.

The nature of feedback and its effects on student learning has been extensively investigated, as seen for instance by the large number of meta-studies and literature reviews on the subject (e.g. Bangert-Drowns, Kulik, Kulik, & Morgan, 1991; Kluger & DeNisi, 1996; Mason & Bruning, 2001; Narciss & Huth, 2004). This research has, however, produced somewhat

intriguing and sometimes even contradictory results. Intriguing in that there seems to be a large number of factors, such as differences in timing, previous achievement, and gender, which affect the outcomes of feedback and also interact with each other. Contradictory in that different studies report dissimilar effects for the same factors, and that feedback from assessment can have both positive and negative effects on students' motivation and learning. These results make it difficult to get a general view of this field of knowledge and even more so to create a set of guidelines for supporting learning.

Feedback, however, is a concept with many meanings, something that has undoubtedly contributed to the diversity of findings. In his widely cited article "Formative assessment and the design of instructional systems", Sadler (1989) uses Ramaprasad's definition of feedback from management theory, to highlight the function of feedback in formative assessment. The essential feature of this definition is that information is denoted feedback only if it is *used to alter the gap* between current performance and the performance aimed for. If not used, it is not feedback – just (in the wording of Sadler) "dangling data".

According to Sadler, key premises for students to be able to "alter the gap" are that: (1) They must know what performance is aimed for; (2) They must be able to assess their performance in relation to some standard(s); and (3) They must possess some strategies to modify their performance in the light of the information provided by the comparison. While the second premise might well be fulfilled by the teacher assessing the student, thereby gathering the necessary information about current performance and passing it on to the student, the third premise inevitable involves the student. It must be the student that uses the information to adjust her performance, even if this process can also be aided by the teacher to some extent.

The notion of using the information sets certain limits to what kind of data that can be included in feedback for learning. Even though all educational assessments are ways of

gathering data about student performance, and as such they always generate some kind of information, the information produced will differ in how well it is suited to support student learning, depending for instance on the purpose and quality of the assessment. As an example, norm-referenced assessment providing data on the relative standings of the students, gives no relevant information as to what to do to improve (except maybe which fellow students not to lend a hand during next lesson). Other examples of data which do not contain any relevant information to act upon are grades, providing only highly coded information, and unspecific praise (such as “well done”).

What is needed for feedback to be effective, is that the data should preferably be task-related, focusing on the quality of student performance, as opposed to focusing on personal characteristics of the students (Shute, 2008). Furthermore, the data must provide enough information to answer the questions (as expressed by Hattie & Timperley, 2007): “Where am I going?”, “How am I going?”, and “Where to next?”. These requirements are often seen as the foundation of feedback for learning, and although there are several other factors reported that seem to affect how effective the feedback is (for instance timing, complexity and extensiveness, whether the feedback is positive or negative, whether the feedback is delivered orally or as written text, etc.), such factors are frequently of subordinate importance as compared to the quality of the information provided (Nyquist, 2003).

Besides these qualities of feedback, which are very much in the hands of the one giving the feedback (whether a person, computer, scoring rubric, etc.), there are also differences depending on those receiving the feedback (i.e. the students). To be able to use the feedback in order to regulate their learning, not only factors such as quality of information and timing are important, but the student also needs to be open to the feedback and know what to do with it. The different ways of receiving and using the feedback by students is, however, not as well investigated; perhaps partly due to the sometimes non-quantitative nature of such knowledge.

This means that, although current research can tell us that there seems to be differences as to how males and females, or students from different cultures, relate to feedback, a deeper insight into how students perceive the feedback, and which strategies they possess to use the information to support their learning, is lacking.

Taken together, as judged by the vast amount of research on this topic, an informed use of adequate feedback holds a great potential for supporting student learning. However, in order to safeguard this potential, knowledge is needed both about the effects of different forms of feedback in different situations and with different content, as well as knowledge about how students use the information provided. While research on the former has provided a large amount of studies and insights, there is a relative lack of studies addressing the latter aspect. This article therefore aims to investigate what evidence can be found in the research literature on how students use the information provided by feedback. The following questions will guide the review:

1. How do students use feedback?
2. Which are the factors that promote or impede students' use of feedback?

### **Procedure and data**

As noted above, there have been a vast number of articles written about feedback in educational contexts. For example, searching ERIC with “feedback” as a keyword, without any further limitations to the search, yields over 19.000 hits. This makes it very difficult to perform an exhaustive survey of what has been written on this topic. Furthermore, students' use of feedback, which is the focus in this review, is not easily captured by search-engine keywords. Research on students' use of feedback was therefore originally searched by starting from a number (36) of recent publications (2009-2010) on the topic, found by searching

broadly (i.e. using only “feedback” and “higher education” as limitations) online in a number of databases, such as ERIC, PsycINFO, Academic Search Elite, Education Research Complete, Scopus, and Science Direct. The reference lists in these articles were then used to find new articles, continuing iteratively throughout the review process; a method sometimes referred to as “snowballing”. Only studies explicitly reporting on empirical research on students’ use of feedback in higher education were included and the search has been limited to include only printed and peer-reviewed material, such as articles in journals, edited books, research reports, and dissertations. Furthermore, a time limit was set to 1990, and studies published before that date has not been included. As has been remarked, feedback research in the 1980ties “was in its infancy at that time and ideas of best practice in both giving feedback and designing studies to describe it were fairly rudimentary” (Hyland & Hyland, 2006, p. 84).

The majority of the studies included in this review were published as journal articles, followed by chapters in edited books, and research reports. The studies included vary across academic subject (e.g. Humanities, Technology, Business, etc.), but the feedback considered is almost exclusively written comments on students’ written work (mostly essays). Research designs encompass mostly questionnaires and interviews, sometimes in combination. A number of studies have complemented students’ perceptions with analyses of examination results or tutor feedback.

### **How do students’ use feedback?**

Do students’ use the feedback they receive? Well, obviously they do; otherwise there would not be such large effect sizes in studies reporting on feedback effectiveness. Still, as remarkable as it may seem, there are studies reporting that students do *not* use the feedback to support their learning. For instance, Brown and Glover (2006) write that their interviews with

students showed that the students did not act on feedback to improve their work, although they did value to receive it. The same message is reiterated in other studies: Maclellan (2001) conclude that the student view of assessment is a depressing one since they do not use assessment to improve their learning and less than half the students in a study by Sinclair and Cleland (2007) actually collected their formative feedback. These findings are in line with MacDonald's (1991) previous review on this topic, where he wrote that many students did not read their teachers' written feedback and those who did read the comments seldom used them.

There are, however, also a number of studies that paint another picture, where students both value and use the feedback they receive. This can be seen in a study performed by Higgins, Hartley, and Skelton (2002) where almost all students (97 %) read the feedback they received and many students also claimed to bear the comments in mind for future work. Furthermore, these authors report that the students in their study not only wanted feedback in the form of grades, but also feedback focusing on generic skills, indicating a will to learn. This could be contrasted to the much darker picture presented by Black and Wiliam (1998), where [school] students more or less ignored the descriptive feedback when also provided with grades.

Most notably, however, when trying to find evidence about how students use feedback, is the fact that there are very few studies which have approached this question. Even if there are a number of studies considering how students act on feedback as part of a larger investigation, for instance by adding a question or two on this topic to a larger questionnaire, only a few studies were found that go into (some) detail about students' strategies for handling feedback. Below, some of the major strategies for handling feedback are presented. Details on some of the studies are also presented as examples of research methodologies used.

When categorizing different approaches for using feedback the study by Furnborough and Truman (2009) can be a good starting point. These authors investigated the use of feedback

through students' responses to feedback on assignments. The study encompassed 43 students in beginner modern language distance learning courses and results indicated that the students could be classified into three groups: those who used feedback strategically by integrating it into the learning process; those who took note of the feedback, but did not seem to use it strategically; and those who appeared to take little account of either marks or feedback. Those students, who used the feedback strategically, reviewed, analyzed, and appreciated tutor comments, but they were not restricted to these comments. Instead, they gradually shifted the locus of control towards themselves, taking advantage of the synergy of both external and internal feedback. Similar approaches can be seen in other studies as well. For instance, in a study by Roberts (1996), semi-structured interviews were performed with 22 Geology students in distance learning. The results show that all of the students read through the comments provided by their tutor (although five of the students also claimed that was all they did). Still, the majority of students used the feedback twice. Initially they spent time looking at their feedback as soon as their assignments were returned, going back to the study materials to check, re-read and re-think relevant sections. Later on many students used the feedback again as part of their examination preparation.

Similar strategies are seen in a study by Orsmond, Merry, and Reiling (2005), where they present findings from semi-structured interviews with 16 third year biology students. Some of the students in this study used feedback as a way to encourage reflection, for instance by re-reading their work after going through the feedback, thereby realizing what could have been done better. Furthermore, one of the students claimed that she compared feedback from different assignments to look for common themes (see also Holmes & Papageorgiou, 2009). When using feedback to enhance learning, however, this could be done either at a mastery level (i.e. helping them to learn differently or by improving performance) as can be for instance in the review by Hyland and Hyland (2006) on research in ESL writing, where

teacher comments on drafts were used by a majority of students and the students also tended to improve their papers, or at performance level (i.e. helping them to pass the examination). As an example of the latter, some students in the study by Orsmond et al. (2005) seemed to use feedback in a very mechanistic way, for instance by ticking off corrections indicated in the margin (see also Orsmond & Merry, 2010).

In the study by Furnborough and Truman (2009), those students who took note of the feedback, but did not use it strategically, viewed feedback more as an indicator of their progress or level of achievement than a tool for learning. As noted by the authors, these students were positive about feedback, but referred more to unspecific strategies for using it, such as having to work harder. Although one of the students cited seemed to be aware of the need to shift the locus of control, she did not possess any strategies for doing so, and therefore remained dependent upon external feedback. Again, similar results can be found elsewhere. For instance, in a study by Cohen and Cavalcanti (1990), nine students in three different language courses provided in-depth verbal reports on how they handled teacher feedback. The students represented high, intermediate, and low performers. All students in the three classes also filled out a questionnaire (n = 43). The results show that most students frequently made a “mental note” of teacher’s comments, identified the points they needed to discuss with the teacher, and asked the teacher about these points. The main feedback strategy was therefore to ask the teacher for additional assistance, while other strategies, such as consulting books or referring back to previous compositions, were rarely used. As a consequence, the students in this study seemed to remain dependent upon the teacher, rather than using the feedback as tool for self-regulation.

The reference to unspecific strategies for using feedback is also mirrored in other studies, for example the study by Higgins et al. (2002) mentioned earlier. Here, both interviews and a questionnaire were used in order to investigate students’ experiences of feedback. Nineteen

students from two different subject units (Business and Humanities, both at level 1) took part in the interviews and 94 students handed in the questionnaire. Although most of the students seemed to read tutors' comments, the time spent doing this varied. The majority of students claimed to spend less than 15 minutes reading the comments; 39 percent of the students even less than five minutes. Furthermore, when they did read the feedback, most students asserted that they "pay close attention" to the comments and also that they "bear comments in mind" for future work (see also Rowe & Wood, 2008).

Returning to the study by Furnborough and Truman (2009), those students who did not seem to use the feedback at all, either expressed doubts about whether the feedback accurately reflected their proficiency, or were anxiously struggling with other aspects of the course. These feelings of doubt or anxiety made it difficult for the students to cope with the feedback, since – as opposed to the other categories of students described above – they had no strategies for dealing with anxiety and ambiguity.

Other studies have shown that students not only ignore the feedback, but may even avoid the issues raised altogether. For instance, in a study by Brown, Glover, Freake, and Stevens (2004), a questionnaire was used in combination with telephone interviews (498 answers to the questionnaire and 112 interviewees) to investigate students' use of feedback. These authors report that students tended to be mark focused and for many students the identification of a weakness was a signal to avoid this area in the examination, rather than using the feedback to improve their understanding and learning. Hyland (1998) presents similar findings, showing that when students were unable to come up with a suitable revision, they sometimes deleted parts of the text to avoid the issues raised.

Besides the categories used by Furnborough and Truman (2009), Orsmond et al. (2005) showed that some of the students in their study used feedback in order to motivate

themselves. This motivational effect could result from either positive or negative comments, the motive being different for different students. While some students wanted both positive and negative feedback, another student claimed that negative feedback made her work harder in order to prove the lecturer wrong. The same authors also showed that students use feedback to understand the grade they have received. This use of feedback is also reported in Holmes and Papageorgiou (2009), who performed a series of individual (two students) and focus group interviews (10 students) with students studying tourism management programs in the UK.

### *Summary*

What then do we know about the ways in which students in higher education use the feedback they receive? First of all we must acknowledge that there is probably much we do *not* know, since there are such a limited number of studies on this topic. Only 12 studies were found that investigated this question at any depth, which means that we have caught a glimpse of the strategies of the some students out there. It is merely “a glimpse”, however, since in most of these studies the only data available is the students’ views as expressed in interviews or questionnaires, which means that it is not known whether the strategies are in fact used by the students.

With these restrictions in mind, it can be seen that students have quite different strategies for using the feedback they receive. While some students seem to use feedback strategically by integrating it into their learning process, others might take note of the feedback, but have no clear strategies for how to use it to support their learning. Still others seem to take little account of the feedback they receive, either steering clear of the issues raised or erasing them, probably hoping that no one will notice. Some students do not necessarily (or only) use the

content of the feedback to improve their learning, but use the feedback for motivational purposes – making them work harder.

In conclusion, the results from this review show that some students obviously have strategies for using feedback, while other students have not. Although the extent to which students use these different approaches are not known, due to the small number of studies and the small sample in most of them, the studies reviewed indicate that the use of feedback at a surface level is prevalent. Here, students try to get more help from the teacher, only briefly read the comments or make minor revisions as suggested by the teacher. However, as has been shown by Cho and MacArthur (2010), such simple revisions seldom affect the overall quality of student work in a positive direction. Furthermore, the use of feedback solely at this level might not be suitable for deep-learning approaches, since it is mainly concerned with the task at hand and not necessarily future tasks. There is also a risk that the primary concern will be to complete the task as quickly and as easily as possible; a strategy termed “the minimalist pathway” by McDowell (2008) from her interviews with students about their experiences of doing assignments. The minimalist pathway could be seen as a classic example of a surface-learning approach as described by Marton and Säljö (1984).

According to the research on feedback, feedback at the process- and self-regulation levels are often more effective to support learning than task- or self-level feedback (Hattie & Timperley, 2007; Shute, 2008). Strategies for using feedback at the process- and self-regulation levels would therefore be more desirable as this could result in more effective and sustainable approaches to learning. As seen in the studies presented, some students seem to have developed strategies for handling feedback at these levels, while others have not. This brings to the fore, the question of how strategies for using feedback can be fostered, so that in the end more students could make effective use of the feedback provided. As Orsmond et al. (2005) notes, students’ use of tutor feedback is a skill that has to be learned, and these authors

also argue that a prerequisite to the development of this skill is awareness of the range of possible uses of feedback. However, as seen by the research reviewed (see further below), many students do not receive any explicit guidance on how to use feedback (Burke, 2009; Weaver, 2006), and as a consequence they may have great difficulties acting on the information provided (Burke, 2007). The lack of strategies for how to use feedback effectively might therefore be one of the major obstacles for students' use of feedback. But there are other factors that influence students' use of feedback as well, and this is where we will turn next: to the obstacles and promoters for the use of feedback.

### **Which are the factors that promote or impede students' use of feedback?**

Obviously, there are many factors that might affect how feedback is used. What we know from feedback research is that effective feedback need to address the issue of how to close the gap, but also that this basic premise is not always enough. Even if the feedback is much elaborated, it need not be acted upon. The reasons for this could be diverse, which is illustrated by Figure 1, where the different links in the transfer of information from tutor to student are shown (cf. Brinko, 1993).

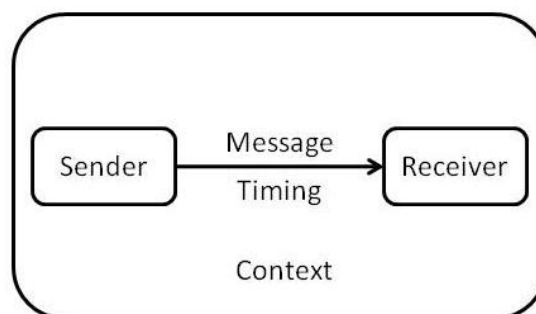


Figure 1. The different links in the transfer of information from tutor to student (cf. Brinko, 1993).

At the far left in Figure 1 there is the sender (Who?), who is the tutor in most cases, but could also be peers, the student herself, a scoring rubric, a computer, etc. Even if the tutor is the specific focus in this article, it is likely to find variability among different tutors. Going to the right in the figure, there is the message that the feedback is trying to convey. In relation to the message, there can be variation both due to the level of quality of the actual information (What?) as well as to the structure, language, quantity, format, etc. of the message (How?). There is also the issue of timing, which has been extensively investigated, concerning for instance immediate or delayed feedback (When?). To the far right in the figure, there is the receiver, who is in this case a student (To whom?). Students differ, however, in several respects, for instance with regard to learning orientation, motivation, previous knowledge, etc., which might affect how the feedback is received and acted upon. Last, there is the context in which the feedback is given (Where?). The context includes the subject taught, the educational level, both social and physical context, work load, whether the task is graded or not, etc. As becomes obvious, there is a very large number of factors that could affect students' use of feedback and the main question is therefore which of these factors that seems to be most important in affecting how students use feedback, either in promoting or impeding this usage.

### *The sender*

If starting again at the far left in Figure 1, what does research tell us about how the sender of feedback can promote or impede students' use of feedback? In the study by Orsmond et al. (2005), the particular tutor providing the feedback was perceived as important by fifty percent of their sample (i.e. eight students). For instance, one of the students claimed that how she

responded to the feedback was tutor-dependent, since she did not trust some of lecturers – because their marks were out of line and without adequate justification. Whether the students chose to approach the tutor to talk about their feedback was also dependent on who the tutor was. One of the students said that she tried to approach her “favorite tutor” if there were several tutors teaching the same module. Other students claimed that they felt less threatened by some tutors, while others were scarier, or that some tutors had less time for students and therefore were more difficult to approach. Whether the students learned from the feedback they received, was also dependent upon the tutor to some extent, where it is easier to follow the tutor’s advice “if you get on with a tutor”.

Another study investigating the sender of feedback is a study by Orrell (2006). Orrell let 16 experienced academics from teacher- and nursing education think aloud while assessing their own students. They also had to read and reflect on a number of statements on the practice of assessment, so that their reflections could be compared to their own behaviors. The results show that the academics differed both with respect to behavior and to “espoused theories” about assessment, but also that there was very little congruence between theory and practice. While in theory assessment was about interest, enthusiasm, motivation, and capacity for originality, in practice it was about arriving at a grade (see also Maclellan, 2001) and indicating “conceptual, spelling and grammatical accuracy or error with minimal engagement with students’ construction of ideas” (p. 454).

To conclude, the sender does in fact seem to have an impact on students’ use of feedback, at least as perceived by the students. If this effect was due to personal attributes of the tutor, it could be very difficult to make a change towards a more learning supporting feedback practice. As noted by Orsmond et al. (2005), however, only one student in their study related to compatibility of personalities (i.e. whether you feel threatened or not). Instead, most responses related to the competency of the tutor and the students seemed to think that tutors

not giving them very much of their time either lacked expertise in the subject, or prioritized teaching lower than other duties. Orrell (2006) points to the fact that teachers may have different beliefs about assessment, but also shows that there is not necessarily any congruence between these beliefs and actual behavior in practice. Since teachers' seems to have good intentions, but are hindered by the routine nature of assessment, she highlights institutional responsibility for improved feedback practices, rather than blaming the individual teachers. Consequently, most sender attributes that have surfaced as important are possible to affect to a greater or lesser extent. This could be done by making an effort to explain the feedback provided and/or signaling that there is time to discuss the feedback with the students, but also by analyzing own feedback practices in relation to theories about assessment.

### *The message (What)*

Inconsistent assessment practices is the most frequent low scoring area in the subject reviews by the Quality Assurance Agency (QAA) in the UK (Rust, 2002) and in more than 40 per cent of the institutions reviewed, feedback to students on their work has been judged of variable quality (QAA, 2001). Similar results can be found in a number of studies from the UK (e.g. Drew, 2001; Hounsell, McCune, Hounsell, & Litjens, 2008) as well as elsewhere in the world (e.g. Ferguson, 2009; Scott, 2005, in Australia). However, what might count as feedback of high quality is still a matter of debate, even if providing enough information to “close the gap” can be seen a central requirement, together with the notion of task-related (as opposed to self-related) feedback (Hattie & Timperley, 2007; Sadler, 1989; Shute, 2008), if improved student achievement is the ultimate goal of feedback. Not surprisingly, these requirements are frequently encountered in the literature on students' use of feedback, where students tend to

perceive feedback negatively if it does not provide enough information to be helpful (e.g. Higgins et al., 2002).

Walker (2009) writes about the importance of comments being such that students are in fact able to use them to “alter the gap”. By examining randomly chosen assignments from tutors on three course modules (a total of 106 answers and over 3000 items) and then conducting phone interviews with students whose assignments had been analyzed (a total of 43 students), she shows that students find skills-development comments the most usable in future work. However, for errors or faulty interpretations displayed in assignments recently submitted, they find comments that include an element of explanation more understandable (and hence more usable).

Sadly, in the study by Walker (2009) a relatively high proportion of the comments examined were very unlikely to be usable. In contrast, in a study by Brown and Glover (2006) where the feedback on assignments from 112 students was investigated, around three-quarters of the comments were found to involve explanation. These numbers resemble those in a study by Chanock (2000), where just about a quarter of the 101 students, whose perceptions were investigated through an questionnaire, noted that they did (or would) appreciate much more detailed comments on their assignments, explaining what they ought to have done (see also Bloxham & West, 2007). However, in other studies, such as Hartley and Chesworth (2000), 90 percent of the students (n = 94) found the feedback not (or only sometimes) helpful.

Even though the majority of the feedback in the study by Brown and Glover (2006) did not only include explanations, but was also content-focused and relevant to the topics that were assessed, the interviews showed that students did not act on this feedback to improve their work. This was because when the time they got the feedback they had already moved on and the students felt that the topics were unlikely to be revisited. This indicates two different

problems with the feedback. On the one hand, it is the timing issue, which will be discussed further below, and on the other is the level of feedback. If concentrating the feedback on very task-specific features, the feedback will not easily generalize to other tasks (Hattie & Timperley, 2007), even if it can be used to complete an assignment that has to be re-submitted. As noted in relation to the study by Walker (2009) above, students find skills-development comments the most usable in future work. However, this kind of skills feedback (or “process-level feedback” in the terminology of Hattie & Timperley, 2007), which students felt aided them in their future work, was poorly represented (Brown & Glover, 2006).

Another kind of feedback that was poorly represented in the study by Brown and Glover (2006), was feedback designed to encourage the students to engage in further learning. Although the students received a reasonably large amount of motivational feedback, the majority was in the form of praise.

Other features of the message conveyed, which are important for students’ use of feedback, are the relation to the assessment criteria and the clarity of the message. In a study by Ferguson (2009), students express that the most important factor in “good feedback” is an apparent link between tasks and guidelines, assessment frameworks and criteria, and the feedback. Weaver (2006) notes that a number of students perceive the feedback to be unhelpful if it does not relate to assessment criteria – a finding that was also confirmed by the feedback samples analyzed – or when the feedback was too general or vague. The detrimental effect of vagueness is substantiated a number of studies, for example by Higgins et al. (2002), where students perceived feedback negatively if it was too general and vague to be of any formative use, and by Burke (2007), who could see that the feedback that students had received was often too brief or too vague for students to act on.

One of the major obstacles for students' using the feedback they receive is not only the vagueness of the message, but also understanding the specific discourse in which the message is coded. Lea and Street (1998) writes that terms used within the "feedback genre" tend to be rather intangible, especially for students, which may have quite different interpretations of the terms used in the comments. This is corroborated by several studies, for instance by Chanock (2000), where 49 per cent of the sample of 101 History and Politics students did not know what academics meant by "analysis". In the study by Higgins et al. (2002), 40 per cent of the students found feedback comments difficult to read because the feedback comments often employed the academic language used to express assessment criteria, but only 33 per cent of the students understood these criteria. From a study using data from a large-scale questionnaire survey as well as semi-structured interviews, including over 1800 students in total, Carless (2006) confirms that comprehensibility of assessment criteria is a major issue. One of the students interviewed affirms that they always get a copy of the criteria, usually already in the first session, but also that the tutors do not explain the criteria and that the students usually do not understand them. Interestingly, that students find it difficult to decode criteria is not an unknown phenomenon for the tutors, as seen in the study by Carless, where not only students, but also staff members were included in the survey as well as focus-group interviews. Still, the tutors interviewed did not carry out any activities to support students' understanding of the criteria.

A way of providing clarity to the feedback and assessment criteria is to make available examples of student work that illustrate the criteria. Orsmond, Merry, and Reiling (2002) report that students taking part in discussions about the marking criteria with tutors, in the presence of such exemplars, made them able to distinguish between individual marking criteria and it also improved their learning. The authors therefore conclude that the use of exemplars may support students' understanding of the marking criteria by providing a

platform for meaningful formative feedback. This conclusion is reiterated by Burke (2007), who notes that the provision of actual essays with usual feedback was advantageous in facilitating students in the process of improving their work. Hounsell et al. (2008) add further tools to this box, such as self-review test questions, commentaries on past exam questions, and model answers.

Model answers are, however, typically not appreciated by students, who want more personalized feedback (Brown, 2007), although – as shown by Huxham (2007) – students may actually learn more from model answers than from personal comments. Furthermore, as Ivanič, Clark, and Rimmershaw (2000) have shown by analyzing responses by tutors, even personal comments by tutors vary in whether and how much they respond to the details of what the students have written.

To conclude, there are several ways reported on how the message conveyed can hinder or aid students' use of the information. A basic requirement is to provide at least enough information to help the students "close the gap". Mutch (2003) notes, from a textual analysis of comments, that tutors seem to take their responsibilities in this area seriously (see also Hyland & Hyland, 2006), but also that some of them wrote very little on the feedback sheets. However, only 15 percent of the comments contained less than 30 words, indicating that it is not general practice to simply write a few words. There seem to be great variations, however, as tutor responses are seen to vary in quantity in other studies as well (e.g. Ivanič et al., 2000).

Provided that there is enough information in the comments for students to use it formatively, there are still factors that may affect their use of feedback. These are:

*The level of feedback*, where students find skill- or process-level feedback (including explanations) more usable in future work, but task-level feedback in assignments recently submitted. However, in the latter case, if focusing on task-specific features, the feedback will

not easily generalize to future tasks. Therefore, a balance between task- and process-level feedback seems to be needed, where process-level feedback should be given in order to aid the student to future improvements, whereas task-level feedback is only needed when the student assignments display errors or faulty interpretations. Furthermore, although the students may receive a large amount of motivational feedback, the majority seems to be in the form of praise (i.e. personal-level feedback), which according to several authors should be used with great care – if at all (see e.g. Kluger & DeNisi, 1996; Kohn, 2004; Wiggins, 1998). As Hattie and Timperley (2007) writes, however, a distinction has to be made between praise that directs attention away from the task to the student as a person, and praise directed towards the effort and self-regulation relating to the task. The latter type may be transformed by students into task-relevant actions, potentially leading to improved performance, which was also noted by some of the students in the study by Orsmond et al. (2005).

*The relation to assessment criteria*, where students perceive the feedback to be unhelpful when it does not relate to assessment criteria; *the clarity of the message*, where students perceive feedback negatively if it is too general and vague to be of any formative use; *the use of specific discourse*, where the students may have difficulties to understand, or hold different conceptions of, the terminology used; *the relation to student work*, where the feedback need to emanate from the actual work that students have produced. To promote the use of feedback, it could therefore be recommended that feedback is not given in general terms, but takes actual student work as a starting point and clearly makes reference to the assessment criteria. If possible, the feedback should avoid technical jargon, but to entirely steer clear of specific discourse might be more difficult. This is because learning an academic discipline or a profession includes learning the specific discourse used, and making sense of this discourse is therefore a natural part of studying in higher education. However, as seen in some of the studies, exemplars can be used in order to facilitate students' understanding of the criteria.

Thus, the exemplars seem to provide a scaffolding structure, which can aid the students while they are struggling to learn a new discourse. It is likely, however, that the reliance on exemplars might decrease as the students proceed through their education.

### *Message (How)*

Whether students can and will use the information provided does not only depend on the information content, but might also depend on how the message is delivered. The aspects of how the message is conveyed to the students are whether the message focus on the negative, different uses of power and authority, and whether technical tools are used to deliver the feedback.

Should feedback focus on errors and weaknesses or on strengths and merits? In fact, it seems like both positive and negative feedback can aid in improving student learning (Kluger & DeNisi, 1996). As a consequence, whether the feedback is expressed in positive or negative terms does not seem to be crucial for affecting learning. For example, there are studies showing that negative feedback can urge students to do better on future tasks, but also studies showing that positive feedback can make students keep on working with a difficult task and not give up. There are studies showing that positive feedback might be more appropriate for tasks that the students want to do, while negative feedback works better for tasks that students have to do (Hattie & Timperley, 2007). In the study by Weaver (2006), a large part of the student sample felt that positive feedback was very important in order to strengthen their confidence, a result that is found in several other studies as well (e.g. Roberts, 1996; Stevenson, Sander, & Naylor, 1996). Above all, students would like to see a better balance between positive and negative comments, so that the feedback would motivate rather than discourage (Weaver, 2006).

That negative feedback can indeed be disheartening, and therefore affect both motivation and performance in the wrong direction, has been shown in several studies (e.g. Scott, 2005; Young, 2000). It seems to be true, however, primarily for students lacking confidence and underachieving students (Hattie & Timperley, 2007), suggesting that feedback might need to be expressed differently for different kinds of students (e.g. high- and underachieving students), which might explain why students react in different ways to positive and negative feedback (Shute, 2008). While high-achieving students may be helped by, and spurred by, hints or only confirming that they are on the “right track”, less confident students might need further support to manage the task and build their self-esteem. A similar argument can be made for students with more or less familiarity with the task at hand (Hounsell et al., 2008)

The use of authority and power in the delivery of feedback is a major issue in the research literature, and is mentioned by several authors. Lea and Street (1998) performed a textual examination of tutor written feedback on student work, and also carried out interviews with both staff and students (in total 23 staff and 27 students at two universities). They report that tutor comments frequently took the form of what they called “categorical modality” (see also Mutch, 2003), which means using imperatives and assertions, with little mitigation or qualification (e.g. “Explain” or unattached question marks). In making these comments, the tutor takes authority, taking for granted the right to criticize “on the basis of an assumed ‘correct’ view of what should have been written and how” (Lea & Street, 1998, p. 169). As seen in the interviews, even where students did not understand the comments, or thought they were unfair or disagreed with them, the students did not challenge the tutor's right to make such comments.

Hyatt (2005) performed a so called “corpus analysis” of 60 feedback commentaries on 6000-word assignments, and he notes that, besides the categorical nature of the comments, a number of linguistic factors could give an impression of unquestionable authority – although,

as he remarks, it would be an over-simplification to assume that such individual linguistic features would lead to a complete shift in understanding of the text. Such factors are for instance “obligating modalities” such as “should”, “must” and “ought”, or pronouns such as “we” or “our” that can either serve to include or marginalize. The use of passives, on the other hand, can serve to evade from agency and responsibility. Hyatt also notes that there was little evidence of reflexivity in the feedback on how advice offered is merely the tutor’s viewpoint and that this could actually be open to challenge. However, there were sporadic invitations to engage in future dialogue on the feedback. Another issue raised in this study, is the potential benefit of named markers, as a strategy to move away from the anonymous authority “presenting canonical unquestionable rules” (p. 350).

Closely related to the issue of authority and power, is the choice of how to write the comments. In the study by Ivanič et al. (2000), some students suggest that the choice of writing makes a difference when reading the feedback. Examples are that the use of a pencil suggests tentativeness, while the red pen is the conventional symbol of authority and reflects the right to make unchallengeable judgments about student work. Another point about how the message is delivered is noted by several students in the study by Burke (2007), who stated that they felt it was very easy for tutors to make cursory comments about changes in study skills, not recognizing the actual challenge facing the student. This could also relate to the issue of authority and power, as it might well be perceived as patronizing.

A somewhat different track in the research on the deliverance of feedback is taken by those studies where tutor feedback is not given for instance as marginal comments or on traditional feedback sheets. Examples are studies by Merry and Orsmond (2007), Ice, Curtis, Phillips, & Wells (2007), and Lunt and Curran (2009), where tutor feedback was delivered in digital-audio format, and Case (2007), where students received feedback generated electronically with the aid of a statement bank. Merry and Orsmond report that students perceived and used

the audio feedback in different and more meaningful ways as compared to written feedback. According to the students interviewed, most of them listened to the feedback more than once and also made notes as they listened to the feedback. Ice et al. showed that students were much more likely to use the content of audio feedback in their projects, as compared to text-based comments. They also report on “extremely high student satisfaction” with audio feedback. Lunt and Curran (2009) likewise report on positive reception by the students, claiming that students are at least 10 times more likely to open audio files as compared to collecting written feedback. The results presented by Case (2007) are also encouraging, as he writes that the electronic feedback improved students’ awareness and understanding of the learning outcomes and the assessment criteria, in this way focusing more on learning. There are, however, studies in which students express that they do not like when work and comments returned electronically (Ferguson, 2009). Still, what students like, and what they benefit from, may not always coincide, which is seen in relation to other features of feedback as well.

To conclude, the major factors investigated in the deliverance of the feedback, includes whether the feedback is positive or negative, the expression of power and authority in different ways, and the use of technology. Many students seem to regard positive feedback as important and increasing their confidence, while comments focusing on the negative are discouraging and unhelpful to improve learning. In relation to authority and power, it can be seen that several different “markers” in the message can indicate an (perhaps unwanted) air of authority and superiority. Examples of such markers are categorical comments, lacking mitigation or qualification, and obligating words such as “should” and “must”. Comments can also be perceived as patronizing, for instance by playing down the challenge faced by the student or by using words such as “we” or “our”, which implies the sharing of values and understandings, although this might not be the case. Even the choice of writing could make a

difference, where the red pen – as the conventional symbol of authority – signals superiority and power. Finally, the use of different technologies, such as feedback in audio format, has been seen to aid and enhance students' use of feedback.

### *Timing*

No matter how rigorous the message might be, if it comes too late to be of any use, it will not make much of an impact on student learning. And even if this might seem all too obvious, there are clear indications that in many instances students do not receive feedback until after they have completed a certain course or module: “It was surprising to us how many students were talking about getting assignments back after the next one was due, after the final exam, after the end of the academic year, or never!” (Scott, 2005, p. 39). Furthermore, Lea and Street (1998) writes that students reported that the feedback they received often bore no relationship to their studies in future modules, and Taras (2006) found that in only five out of 166 modules there were any repetition of the same assessment type within any one module which would permit the use of an iterative feedback cycle.

As was noted earlier in relation to the study by Brown and Glover (2006), the problem of timing is not only due to feedback being received too late, since the students could (at least in theory) use the feedback in subsequent modules, but it is also an interaction effect with the level of feedback. If the feedback is obtained too late *as well as* specific to a particular piece of work (i.e. at task level), this combination makes it virtually impossible for the students to make use of the feedback.

Although “the quicker the better” seems to apply for feedback in most cases (see e.g. Shute, 2008), many students are actually willing to wait if there is a possibility to get more high-

quality feedback (Ferguson, 2009). However, according to the students interviewed in Brown (2007), the waiting time should not exceed two weeks.

To conclude, there are studies indicating that students sometimes receive their feedback after finishing the course or module that is the focus of the feedback, and therefore that the feedback might no longer be of any use to them (e.g. Brown, & Glover, 2006; Hartley, & Chesworth, 2000; Lea & Street, 1998; Yorke, & Longden, 2008). This problem is even more pronounced if the focus of the feedback is at task level.

### *Context*

There are a great number of contextual factors that might be thought to have an impact on the use of feedback, but there is not all that many found in the research literature. In fact, there is one factor that totally dominates, and that concerns the use of grades. The study by Burke (2007) makes a good example. She notes that many students lacked the motivation to engage with the feedback they received, since they felt they had completed that task and wanted to move on. They would only undertake such a task if it was worth their while *in terms of grades or credits*. Some studies indicate that tutors are playing along in this grading game by providing feedback that is centered on marks and focusing on “feeding back” rather than “feeding forward” (Brown & Glover, 2006; Brown, Glover, Freake, & Stevens, 2004; Connors & Lunsford, 1993). However, even though tutors put a grade at the end, most of them also write something to support that grade (Ivanič et al., 2000), and Higgins et al. (2002) writes that the students in their study did not show any evidence of being any “instrumental consumers, driven by the extrinsic motivation of the mark” (p. 54). Instead, these authors paint a more optimistic picture, where students, even if recognizing the importance of grades, adopt a more “conscientious approach”. This means that the students are intrinsically

motivated and employ deep learning studying strategies, and that they seek feedback which will support this approach (see also Hounsell et al., 2008). This picture is contrasted by other studies, where students are seen to be more mark focused (e.g. Brown et al., 2004), where grades are perceived as barriers to learning by the students (Lipnevich & Smith, 2009), or where grades have a serious impact on students' feelings and self perception (James, 2000). As expressed by Carless (2006), the balance of student focus on grades therefore remains unclear.

Other contextual factors investigated are for instance the presence of formative assessment (Greer, 2001) or self-assessment (Taras, 2003); factors which seem to aid in students' use of feedback. In the study by Greer, more than 90 percent of the students stated that the feedback helped in clarifying problems that they had, and Taras showed that the integration of self-assessment with tutor feedback is efficient both in helping students overcome unrealistic expectations, as well as focus on achievement and quality rather than effort.

To conclude, the main contextual factor which has attracted the attention of researchers is the use of grades. Students' reactions to the presence of grades are not unitary, however, and students respond in different ways. While the grades might direct the attention of some students away from the intended learning, others seem to maintain their deep-learning approach even in the presence of summative judgments. The use of formative assessment and self assessment has been seen to aid and enhance students' use of feedback for learning.

### *Receiver*

The last factor in the model based on Figure 1 is the receiver (i.e. the student). What do the students themselves bring along, that might promote or impede the use of feedback? The general answer to this question relates to meta-cognition and more specifically to strategies

for using feedback. As Burke (2009) notes, the majority of students (60 %) in her study did not possess any strategies to act on tutor feedback at the time of entering higher education. That this indeed a problem, is shown in another study by Burke (2007) where the difficulty of acting on feedback was identified as a major problem by the students. Furthermore, survey results from the study by Weaver (2006) indicate that students do need assistance in order to understand and use feedback before they can engage with it. In this study about half of the students stated that they had not received any guidance on how to read and use feedback.

Another issue about the receiver of feedback, concerns the self-esteem of the student. From a study investigating mature students' feelings about feedback on assignments, Young (2000) argues that a student's level of self-esteem affects the interpretation of the message she receives. Students with low self-esteem tend to view all feedback as a judgment of ability, while those with high self-esteem do not, no matter how carefully the comments are phrased by the tutor. These findings are corroborated by Furnborough and Truman (2009), who found that students using feedback strategically often have a positive approach to feedback and looks forward to the next task. By contrast, other students are more affected by emotions, such as anxiety or doubts, making it hard for them to find confidence in the feedback. Consequently, these students do not seem to take any account of the feedback. Other studies, however, have found that self esteem did not play a part in students' reactions to feedback, and that students at all levels viewed feedback primarily as a learning opportunity, not affecting their self esteem (Brown, 2007).

To conclude, in the studies reviewed there are two things that students bring with them, and which might affect their use of feedback. First, it is the skills of how to interpret and use feedback. Even though many students have difficulties acting on feedback, a large number of students receive no guidance on how to handle this problem. Second, it is the self-esteem of the students, where some students tend to view all feedback as a judgment of ability. There

are, however, some indications that these two student characteristics are not totally independent, since those students being able to use feedback strategically as a tool for learning, might also be the ones who have a positive approach to feedback. If this is true, then learning strategies for using feedback could also improve students' self-esteem.

### *Summary and conclusions*

As has been seen in this review, there are many factors that might promote or impede students' use of feedback, and of course only a small number of these potential influences have in fact been investigated. This, again, means that there are a lot of things we do not know, but the aim of this review is to see which factors have been investigated and which factors seems to be of major importance. In doing so, it will hopefully also reveal some areas that need further attention.

The factors investigated have been grouped according to the categories in Figure 1, where the different links in the transfer of information from tutor to student are shown. The factors are:

- The perceived competency of the tutor.
- The level of feedback.
- The relation to assessment criteria.
- How specific (as opposed to general or vague) the feedback is.
- The use of specific discourse.
- The use of exemplars.
- The relation to student work.
- Whether the feedback is positive or negative.
- Expressions of power and authority.
- The use of technology for deliverance.

- The timing of feedback.
- The presence of grades.
- The use of instructional methods, such as formative assessment and self assessment.
- Students' strategies for how to interpret and use feedback.
- Students level of self-esteem.

## **Discussion**

This article have reviewed studies investigating how students' in higher education use information about their performance on assessment tasks, as provided through tutor feedback. As was argued in the introduction, the different ways of receiving and using the feedback by students is not extensively investigated, and a deeper insight into how students perceive the feedback, and which strategies they possess to use the information to support their learning, is lacking. The aim of this article has therefore been to contribute to the knowledge about how students use the information provided, by reviewing the evidence found in the research literature. Since the main interest of this review is improved student learning, the following questions will guide the discussion:

- Do students use feedback to support their learning?
  - a. If yes – what strategies do they have for using it?
  - b. If no – why are they not using it to support their learning?
  - c. If no – are there any changes that can be made in order to increase the likelihood of students using the feedback to support their learning?

*Students' strategies for using feedback to support their learning*

From the results it can be seen that some students do have strategies for using feedback to regulate their learning. Examples of such strategies are re-reading their work after going through the feedback to see what could have been done better or comparing feedback from different assignments to look for common themes. Furthermore, these students do not necessarily depend entirely on the tutor and the tutor's comments. Instead, they fuse the external feedback with their own understanding, going – as Jerome Bruner once put it – beyond the information given.

Another strategy for using feedback to support learning is by using the feedback as a motivator to put more effort into your work. This is a more indirect use of feedback, but it might well be important. However, it might also be dependent upon whether the feedback is positive or negative. For instance, if the feedback is mostly positive, will it still spur the student to further engagement, or will it induce “the minimalist pathway” (McDowell, 2008) described earlier? Or if the feedback is mostly negative, will it still spur the student to further engagement, or will it affect student self-esteem negatively so that the student think it is of no use to make further efforts?

*Students' reasons for not using feedback to support their learning*

There are principally two reasons for not using the feedback to support learning: either the student is hindered in some way and cannot use the feedback provided or the student does not want to. While it is easy to imagine several obstacles for students' use of feedback, and this review has indeed found quite a number of such factors (e.g. lack of strategies, difficulties of understanding the discourse, feedback arriving too late etc.), it is perhaps more difficult to find reasons for not wanting to use feedback provided. However, “the minimalist pathway”,

where students' primary concern is to complete the task as quickly and as easily as possible, may be such a reason. The students reported to delete parts of their assignments, or avoiding the weak areas as indicated by the feedback, might do so because it provides a quicker and easier route to "success" – given of course that they do not fail the assignment. Another reason for the same behavior might be low self-esteem, where not acting on the feedback is a way of saving face, since "I'm not able to make it anyway". While low-esteem students might be helped by encouragement and a more allowing learning environment, finding ways to make students choose a thornier path might be harder. For as Joughin (2010) points out, the empirical evidence for the often mentioned belief that students' approaches to learning can be changed by changing the assessment is really quite scarce – at least when trying to change students' strategies towards a deep-learning approach. However, by having high standards, and communicating the expectations to the students, they can at least be forced to achieve a certain level of performance – perhaps making it necessary for the students to use the feedback they receive.

### *Helping students to use feedback to support their learning*

Let us say that the students do want to use the feedback that is provided to them, but still do not. What might be the problem and how can we help? As shown by Furnborough and Truman (2009), students who did not use the feedback at all, expressed feelings of doubt or anxiety. Not being able deal with these feelings, it was difficult for the students to cope with the feedback. This indicates that students may have some personal issues that need to be resolved before the students can attain to strategies for using feedback, and these issues might very well be out of reach for the tutor. However, some of these feelings may also result from not having any strategies to deal with the feedback, rendering the student more or less

helpless. Teaching students strategies for how to deal with feedback might therefore be of crucial importance, since the lack of such strategies seems to be a bottleneck for many students. As shown in a number of studies, students sometimes refer to quite unspecific strategies, such as “working harder”, when asked how the feedback influences their learning. Since these students are not able to specify the strategies used, this most likely reflects the fact they lack any specific strategies to guide them. They do recognize that feedback could (or should) be used for learning purposes, however, even if they do not necessarily know how. Even if students have strategies for dealing with feedback, they may still be hampered by other factors. As we have seen, such factors include the perceived competency of the tutor, the level of feedback, the relation to assessment criteria, etc. (see last section of results). We have also seen that there are a number of strategies to reduce this hampering and potentially increase students’ use of feedback. Such strategies are, for example:

- Making feedback, and feedback usage, integrated parts of instruction.
- Finding a balance between positive and negative comments.
- Giving feedback within the course or module of interest, so that the students can make use of the information.
- Clearly making reference to the assessment criteria, and using exemplars as a (concrete) way to communicate the meaning of criteria and standards.
- Having a balance between task- and process-level feedback, where process-level feedback should be given in order to aid the student to future improvements, whereas task-level feedback is needed when the student assignments display errors or faulty interpretations.
- Avoiding expressions of power and authority.

Of course, using this list of recommendations cannot guarantee that students will actually use the feedback they receive. This is because there will always be differences between students, between subjects, between contexts, etc. There are also some complicated issues that might be more difficult to resolve than by simply following a list of friendly advice. Some of these issues will be presented below as “paradoxes”.

### *The paradox of individualizing feedback*

As has already been discussed to some extent, the students differ in several important respects (such as approaches to learning, self esteem, conceptions of assessment, etc.), making it difficult to provide the students with adequate feedback since it is often not feasible to tailor the feedback to the needs of each individual student. Still, students generally want feedback to be individual and emanating from their own work (e.g. Brown, 2007). Therefore, a seemingly paradoxical solution to the problem of providing prompt feedback to large numbers of students is to give all students the same feedback: a model answer. Preferring personalized feedback, students might be critical about the use of model answers. However, as was noted above, students may actually perform better with the aid of model answers as compared to personal comments (Huxham, 2007). Obviously, what students want and what they really need does not necessarily coincide. This might be particularly true for minimalist-pathway students, wanting the tutor to provide them with very detailed and specific feedback, so that they can pass with as little effort as possible.

Burke (2007) is also critical about using model answers (or essays), at least if they stand alone. She argues for the use of authentic essays *complemented by feedback* (i.e. turning them into exemplars), so that the students can see what they have to do. Exemplars have indeed been shown to be effective tools for students learning (Jonsson, 2010; Orsmond et al., 2002),

but so have model answers – when they are integrated in instruction. As an example, Jonsson, Mattheos, Svingby, and Attström (2007) let students from dental and teacher educations compare their own answers to professional answers, and the students had to write a comparison document where they discussed the differences between the answers, highlighted own strengths and weaknesses, and identified needs for future learning (i.e. they self-assessed their answers in relation to a model answer). This self-assessment was then assessed as an integral part of an examination.

The main point to be made here is that even if personalized and detailed feedback might very well be preferred by the students, such feedback is not necessarily the most optimal for their learning. Instead, the students need to be *actively engaged* in the feedback and not mere receivers of it. Therefore, although model answers or exemplars may not at first seem very attractive, since such feedback does not emanate from individual student's work, using them for instance to let students compare and assess their own performance is actually a means to engage students with the feedback and in this way support their learning and self-regulation.

### *The paradox of understanding feedback a new language*

When trying to make sense of the feedback they receive, students need to decipher the academic code in which the feedback is delivered. Although it might help if the feedback is written in a less formal way and with less technical jargon, this is not a problem that can be solved by simply leaving out, or rephrasing, the academic wording, since this is the very language that students are supposed to become accustomed to. It is therefore somewhat of a paradox, that the students have to understand feedback written in a language that they do not yet fully comprehend.

Some of the studies in this review point to the use of exemplars in order to provide the students with more concrete manifestations of the criteria and standards, as opposed to only providing (abstract) words. This combination of experiencing how authentic work may look like, and also the relevant language to make sense of these experiences, seems to create a way to escape this version of the “Catch-22” (Rust, Price, & O’Donovan, 2003). Another successful strategy, besides exemplars, to provide the desired combination of tacit and explicit knowledge transfer is through instructional interventions, such as peer assessment (e.g. Balan, 2009; Rust et al., 2003). By giving the same task to all students, and then letting them assess each others’ solutions in relation to the assessment criteria, gives practice in using the criteria on a spectrum of solutions of (presumably) varying quality (Sadler, 2009). This variation in quality is, according to for instance Marton and Booth (1997), an important prerequisite for being able to discern the qualities aimed for.

Much like the last section on model answers was about engaging students in using feedback in relation to their own performance, the abovementioned activities (such as the use of exemplars or peer-assessment) are examples of ways to engage the students in applying criteria and standards. There are also other instructional interventions, such as self-assessment, requiring the students to engage with the feedback as an integral part of instruction, which are shown to be effective in improving students’ use of feedback (e.g. Carless, 2002; Paukert, Richards, & Olney, 2002; Taras, 2003). The effect of such interventions is further supported by other research, which suggest that formative assessment and self assessment can be effective means to improve student learning (e.g. Black & Wiliam, 1998; Nyquist, 2003), especially in relation to explicit criteria and standards (Jonsson, 2010; Jonsson & Svingby, 2007), as well as to promote increased reflection on own performance and responsibility for learning (Dochy et al., 1999; Topping, 2003). However, in relation to feedback, self-assessment needs to be integrated with tutor feedback, since without tutor

feedback self-assessment cannot help students to be aware of their weaknesses. As shown by Taras (2003), the majority of students felt that they had done their utmost before handing in their work, which means that they needed tutor input to advance further. Apparently, instructional innovations such as peer- and self-assessment should not replace, but complement, tutor feedback.

### *The paradox of wanting both personal and objective feedback*

As seen above, active engagement with the feedback seems to be more or less instrumental if it is supposed to support learning and self-regulation. Another way to provide active engagement in the feedback process, as shown by the review, is by the use of technology. Case (2007) describes how the feedback process in a criminology course was rendered more effective by using an electronic template form, together with a statement bank, to give feedback (cf. recommendations by Scott, 2005). In parallel, students were taught and encouraged to self-assess their proficiency in relation to assessment criteria, and they were also offered follow-up meetings with the tutor. According to the author, this intervention streamlined the feedback procedure for lecturers by reducing both marking time as well as student queries regarding assessment and grading. The students, on the other hand, made significant improvements in performance due to enhanced awareness and understanding of learning outcomes and assessment criteria.

In the example above, as well as in the section on model answers, ICT was used as a tool for providing prompt feedback (Case, 2007; Jonsson et al., 2007). Besides efficiency in terms of time and workload, technology has also been shown to render the feedback more efficient in terms of student learning. In her review on formative feedback, Shute (2008) suggests that tutors should avoid delivering feedback orally, since written- or computer delivered feedback

is perceived as more neutral and less biased than oral feedback: “Feedback from a trustworthy source will be considered more seriously than other feedback, which may be disregarded. This may explain why computer-based feedback is often better than human-delivered in some experiments in that perceived biases are eliminated ...” (p. 177). This conclusion is corroborated by Lipnevich and Smith (2009), where students viewed computer feedback as unbiased. However, it was also found that unfavorable comments and grades provided by the computer were dismissed as irrelevant by the students. Furthermore, as has been discussed above, a common problem of feedback is that it easily conveys a sense of authority and superiority, especially if it comes from an anonymous source not possible to question. While possible ways to get around this problem might be to write the feedback in a more personalized manner (e.g. “I think that ...”), by raising questions (e.g. “Do you think that ...?”), or by making suggestions (e.g. “What if you would ...”), these measures seem to be at odds with the effort to make the feedback more neutral and objective.

What might be at work here is a conflict between the psychometric ideal, where assessment is seen as a (more or less) objective measurement of knowledge, and the view of assessment as a professional judgment. If students hold the view of assessment as a scientific enterprise, they are likely to perceive the judgment of the tutor as biased, while computers might be seen as more objective and neutral. As has been argued, however, assessment is an inherently subjective process (see e.g. Joughin, 2009). This is because it has to be people who decide if for instance an essay is good enough; people who have experience of essay writing and know what characterizes a good essay. This is not to say that the assessment is arbitrary, or that it is totally dependent upon the unique individual who performs the assessment. Even if the assessment has to be performed by someone, it is still performed in relation to what is considered quality within a particular community of practice, such as teaching, cultural studies, or biochemistry – and knowledge about the quality criteria requires people who have

personal experience of working with these criteria, and who can apply and communicate their meaning, since the meaning of such criteria are not lexical but discursive conventions. While, in principle, anyone with access to the scoring guide can score an objective test, since no professional competency is needed in order to decide whether the answer is right or wrong, to assess whether an argumentation is convincing enough, requires a person with deep knowledge about the criteria and standards of the particular subject within which the text is written, as well as comprehensive subject knowledge. If this interpretation is correct, it would call for a more explicit demarcation between psychological and educational measurements on the one hand, and assessment as a professional judgment on the other in instruction. This is especially important in relation to student learning since the summative, decontextualized, and inauthentic nature of psychometric assessments has been accused of failing to support and encourage relevant student learning (e.g. Birenbaum et al., 2006). Furthermore, as Orrell (2006) noted, there was very little congruence between theory and practice in assessment, which means that tutors themselves might be aided in their work by more clearly reflecting on their conceptions and practices in assessment, as well trying to communicate them to the students.

Another technological tool, besides the computer, which has been shown to aid in delivering feedback, is the audio recorder. Several studies have investigated the use of audio-recorded feedback, for instance Merry and Orsmond (2007) who report that students perceived and used the audio feedback in different and more meaningful ways as compared to written feedback, as well as Lunt and Curran (2009) and Ice et al. (2007) who both found students to be very positive about audio feedback. A possible explanation for the success of audio feedback might be that it is easier to motivate and explain feedback given orally in a nuanced way, as compared to the written format, which is more succinct and formalized. Other explanations, as given by Ice et al. from interviews with students, are that audio feedback is

associated with feelings of increased involvement and a feeling of that the tutor cared more about the student. This, again, would favor the interpretation that many students prefer personalized feedback, rather than objective comments from a computer, and it has been suggested that creating a dialogue between student and tutor might favor student learning from feedback. Consequently, Bloxham and McDowell (2010) invited students in dialogue with the tutor through “interactive cover sheets”. A problem in this study, however, was that students had difficulties engaging in dialogue with the tutors without proper knowledge of criteria and standards. A prerequisite for student involvement and genuine dialogue therefore seems to be a transparent and inclusive assessment culture, where students are not only invited to participate, but are also familiar with the rules of the game.

### **Concluding remarks**

According to Sadler (1989), key premises for students to be able to “alter the gap” are that: (1) They must know what performance is aimed for; (2) They must be able to assess their performance in relation to some standard(s); and (3) They must possess some strategies to modify their performance in the light of the information provided by the comparison. If these three requirements are not fulfilled, and the feedback is not used to improve student performance, the feedback is only “dangling data”. In the studies reviewed, there is a lot of such data. In fact, the overall picture painted by the research on students’ use of feedback, might be seen as a somewhat depressing one. Huxham (2007) summarizes the main critique, where feedback is often characterized by ambiguity and opacity, negativity, lateness, and uncertainty about relation to criteria and contexts. Furthermore, many studies indicate that tutors mainly feed back to the students; telling them what they have done, or maybe what they should have done, but seldom addressing how to move on. Apparently then, there are a

number of ways in which the feedback practice of tutors can be improved, several of which has been presented in this review. What becomes evident, however, is that merely following a set of guidelines for producing high-quality feedback – even if it means providing the students with large amounts of personalized and detailed feedback – will probably still not do the job. This is because, although some students do possess strategies to modify their performance in the light of the information provided by feedback, many students seem to lack such strategies – and teaching strategies for using feedback does not generally seem to be a part of the curriculum. Instead, what seems to be needed is the active engagement of the students with feedback in relation to their own work, for instance through the use of model answers or exemplars, so that the students learn what high-quality work looks like, but also the active engagement with criteria and standards through peer- and self-assessment, so that they become able to assess their own work. Therefore, strategies for actively engaging in feedback have to become an integrated part of the curriculum, if most students (as opposed to only some of them) are to be able to “altering the gap”.

### *Future research*

One of the most striking results of this review is the small number of studies investigating students’ actual use of feedback. Furthermore, these studies rely almost solely on students’ statements, seldom investigating how they actually use the feedback provided. The major call for future research is therefore more studies investigating students’ actual strategies for using feedback, to what extent they apply different strategies, and which strategies that are fruitful to learning. But also how the students react to interventions implemented in order to change and improve their feedback practices.

Furthermore, even if this review has presented a number of factors that might affect students' use of feedback, there is most certainly room for more. As can be seen in relation to the model in Figure 1, there are a great number of potential factors that might have an impact on the transfer of information from sender to receiver, but only a limited number of these have in fact been investigated. A remarkable point is that the use of modern information- and communication technology (such as e-mails) has not been more extensively investigated in relation to feedback purposes, since the use of ICT could have (and in some cases have been shown to have) a powerful impact on several of the steps in the feedback chain. However, there are also indications that use of ICT interact with students' conceptions of assessment, for instance by sometimes relying more on the seemingly objective and neutral feedback provided by computers than on the (potentially) biased feedback from tutors. Yet, what computers can assess in terms of quality is still very limited, and the professional judgment by tutors will definitely be an important part of assessment practices in higher education for a long time to come. Therefore, the different conceptions of assessment might need to be explicated to the students, possibly making them more conscious consumers of feedback. To the extent that there is any truth to the fear of tutors' judgment being biased and unreliable, there might also be a need to find ways to make performance assessments more credible (see e.g. Jönsson, 2008).

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