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What is This?

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Facilitating productive use of feedback in higher education

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Abstract
Although feedback has a great potential for learning, students do not always make use of this potential. This article therefore reviews research literature on students' use of feedback in higher education. This is done in order to find answers as to why some students do not use the feedback they receive and which factors are important in influencing students' use of teacher feedback. Findings show that utility is not only a key feature for students' use of feedback but also that some factors, such as lack of strategies for productively using feedback or lack of understanding of academic discourse, may hinder students' possibilities to use the information formatively.

Formative feedback on assessment

Feedback has been shown to hold great potential for student learning. According to literature reviews and meta-studies such as the ones by Black and Wiliam (1998) and Hattie and Timperley (2007), feedback can be one of the most potent influences on student learning and achievement. Although it is difficult to create a set of simple guidelines for supporting learning, we can—at least to some extent—claim to know what high-quality feedback should look like. For instance, for feedback to be effective, the information 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 feedback should not only provide information about past performance but also help students to improve their performance (Nicol, 2007). Besides these basic requirements, which are often seen as the foundation of feedback for learning, there are several other factors reported that seem to affect how effective the feedback is. Although the relationships between these factors are typically very complex and unpredictable, it is generally assumed that feedback also needs to be delivered in a timely, specific, and individualized manner (e.g. Gibbs and Simpson, 2004–2005; Race 2001; Race, 2007). A problem, however, is that in order to be effective, feedback must not only be delivered appropriately, but it must also be used

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by the students. Sadler (1989) highlights this function of feedback in formative assessment, by stating that information on student performance should be denoted feedback only if it is actually 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." Unfortunately, there is ample evidence of both anecdotal and scientific nature that a number of students do not use the feedback they receive, and therefore do not realize the potential of feedback for 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 receiving it. The same message is reiterated in other studies: MacLellan (2001) concludes that the student view of assessment is a depressing one since the students do not use assessment to improve their learning, and less than half of 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 many students did not read their teachers' written feedback, and those who did read the comments seldom used them.

Why, then, do some students not use the feedback they receive? One answer to this question may very well be that the feedback is not good enough. In fact, inconsistent assessment practices is the most frequent low scoring area (at least in relation to other areas) in the subject reviews by the Quality Assurance Agency (QAA) in the United Kingdom (Rust, 2002), and in more than 40% of the institutions reviewed, feedback to students on their work has been judged of variable quality (e.g. QAA, 2001). Similar results can be found in a number of studies from the United Kingdom (e.g. Drew, 2001; Hounsell et al., 2008) as well as elsewhere in the world, for example, Scott (2005) in Australia. As can easily be seen, the students are not altogether pleased with the feedback they receive. However, there are also a number of studies showing that teacher feedback is not homogenous but varies greatly along several dimensions, which means that not all feedback is of questionable quality and that some students do seem to get extensive, positive, and supportive feedback (Connors and Lunsford, 1993; Hyatt, 2005; Hyland and Hyland, 2001; Ivanič et al., 2000; Mutch, 2003; Randall and Mirador, 2003). Hence, low-quality feedback does not seem to be the only explanation as to why students do not use the feedback they receive. Instead, it is important to remember that to be able to use feedback in order to regulate their learning, not only are factors such as quality of information and timing important but also that the students need to be open to the feedback and know what to do with it.

According to Sadler (1989), there are three key premises that need to be met if students are to be able to use the information in order to "alter the gap." These premises are (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 inevitably involves the student. It must be the students who use the information to adjust their performance, even if this process can also be aided by the teacher to some extent. The different ways of receiving and using the feedback by students are, however, not very well investigated, perhaps partly due to the sometimes nonquantitative nature of such knowledge. As noted by Hounsell (2003), the studies available on students' perceptions and use of feedback are neither large in number nor in scope. Typically, they are subject specific and often confined to a single course or institution (or sometimes even a single teacher). This means that a deeper insight into students' strategies for using feedback is lacking, as is a systematic analysis of the factors that may influence (either positively or negatively) the productive use of feedback for learning. The aim of this study is therefore to review available research

literature in pursuit of factors that may either promote or impede students' use of feedback, information that can then be used to aid students in using feedback information more productively as a part of their learning process.

Method

A vast number of articles have been published about feedback in educational contexts, which 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 (27) of recent publications (2009–2010) on the topic, found by searching broadly (that is using only "feedback" and "higher education" as limitations) online in a number of databases, such as Education Resources Information Center (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 doctoral dissertations. Furthermore, a time limit was set to 1990, which means that studies published before that date has not been included. The review is also limited to studies that have investigated how students use feedback provided by teachers (or tutors/instructors). Although acknowledging that feedback can also be provided by peers, the students themselves, or computers, this article focuses only on teacher feedback. The main reason is that feedback from the teacher 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. A further inclusion restraint has to do with the fact that a great number of studies investigating factors influencing students' revisions do so in an English as a Second Language (ESL) context, and sometimes in the quite narrow field of error correction. This overrepresentation of ESL studies is a consequence of a vigorous debate concerning whether grammar correction should be abandoned (Ferris, 2003). Since the question of error correction in ESL writing is somewhat marginal in relation to higher education in general, these studies were not included in the review. Other ESL or English as a Foreign Language (EFL) studies, however, dealing with students' use of feedback on essays, will be presented along with other studies on feedback below.

In total, 103 studies were found that met the inclusion criteria. The majority of these studies were published as journal articles, followed by chapters in edited books and research reports. Furthermore, the studies vary across academic subject (e.g. Humanities, Technology, Business, etc.). Regarding the feedback considered in the research reviewed, this consists almost exclusively of written comments (with or without grades attached) on students' written work (mostly essays), although there seems to be a growing number of studies investigating digital audio feedback. Research designs encompass mostly questionnaires and interviews, sometimes in combination. A number of studies have complemented students' perceptions with analyses of examination results or teacher feedback. Only very few studies were found that go into detail about students' strategies for handling feedback. In fact, only two studies (Dessner, 1991; Dohrer, 1991) were found that investigated how students go about using their feedback in vivo. This was done by employing the "think-aloud protocol" method to record students' verbal reports during revisions of essays. One other study (Paulus, 1999) did use a similar design, but there are no results reported beyond the fact that the students

varied significantly in their use of feedback. As a result, all but two studies investigating students' use of feedback have done so indirectly, either by studying changes made in revised drafts or by asking students about how they use their feedback. This means that the evidence available on students' actual use of feedback is quite scarce. Another matter that needs to be acknowledged is that there are a number of studies in which students use feedback to revise their assignments. However, it is generally not voluntary for the students to hand in the revised tasks but an inbuilt feature of the specific courses studied. It is reasonable to assume that this condition affects students' use of feedback, making it more probable that they actually use the feedback, as compared to conditions where handing in revised versions are not required (e.g. Saito, 1994). There are also studies where students' strategies for using feedback are not investigated in relation to any particular assignment. In such studies, students have been asked about their use of feedback in more general terms, either through interviews or questionnaires, or through a combination of these instruments.

Although great care has been taken to find and include as many studies as possible on this particular topic, the review is unlikely to encompass all available research about students' use of feedback. Besides the obvious fact that only research published in English has been included, a major limitation of the "snowballing" technique is that research that no one has made reference to is not found. However, this limitation has to be balanced against the fact that the amount of research on feedback is extremely large, making it very difficult to perform an exhaustive search in this area. As a compromise, a thorough search was made for recent articles, which were then used as starters for the "snowballing," thereby avoiding starting from a too narrow selection of studies and also increasing the possibility to find peripheral research—including research not indexed in the major databases on educational research. Still, there is a possibility that studies, or even groups of studies, have been left out. Another consideration when interpreting the conclusions is the skewedness of the data. For instance, most studies have dealt with written feedback on written tasks (such as essays). Although this most probably mirrors higher education practices, care must be taken if extrapolating the findings to other kinds of assignments. There is also a large number of studies dealing with one specific discipline (that is language learning, and particularly ESL), which might influence the results. Such influence might be the exaggeration of some findings, making them appear more general or frequent, even if they are quite specific for this discipline. This weakness has to be balanced against the aim of including as many studies as possible, as well as the aim of discerning patterns that might transcend several disciplines.

Findings

A diverse set of factors that may affect students' use of feedback can be identified in the literature (such as perceived credibility of the teacher, mode of delivery, the use of prestructured formats, demographic factors and gender, students' self-esteem, etc.). In most cases, however, there are only a few studies on each individual topic, and the results are sometimes contradictory, making it difficult to discern any clear tendencies. Still, there are a smaller number of factors that are common to a majority of the studies and that can be grouped together into themes that transcend the data. These themes, or challenges, are presented below.

Challenge 1: feedback needs to be useful

As mentioned in the introduction, teachers' feedback may be of questionable quality, for instance, by not providing enough information for the students to act upon. This problem is recognized by students, who dislike one-line comments and perceive feedback negatively if it does not provide

enough information to be helpful (Drew, 2001; Ferguson, 2011; Higgins et al., 2002). In fact, to be able to use the feedback seems to be at the very heart of student engagement with feedback (Price et al., 2010) and students prefer informative feedback that can be used in the very near future (Ball et al., 2009; Brown and Glover, 2006; Carless, 2006; Drew, 2001; Ferguson, 2011; Higgins et al., 2002; James, 2000; Lipnevich and Smith, 2009; Pitts, 2005; Rea and Cochrane, 2008; Rice et al., 1994; Scott et al., 2009; Séror, 2009; Weaver, 2006; Whitington et al., 2004). As seen in studies where revision is asked for, most of teacher's comments are indeed attended to by the students under such circumstances (Paulus, 1999; Zhao, 2010). Still, not all assessment situations require students to make use of their feedback, and Taras (2006) found that only 5 out of 166 modules allowed for an iterative feedback cycle. This means that students do not always get the opportunity to use the feedback they receive.

Another problem is that students sometimes receive their feedback *after* they have completed a certain course or module (Brown and Glover, 2006; Hartley and Chesworth, 2000; Holmes and Papageorgiou, 2009; Price et al., 2010; Rea and Cochrane, 2008; Scott, 2005; Whitington et al., 2004; Williams and Kane, 2009), which also makes it difficult for the students to use the feedback. Furthermore, in a study by Lea and Street (1998), feedback was not only late but also highly task specific and bore no relationship to studies in future modules. As shown by Walker (2009), students may find such task-specific feedback useful when revising work that is going to be handed in again, but prefer skills- or process-level feedback for future assignments. This means that if the students are engaged in one particular assignment, which is to be revised, they want more corrective feedback so that they can make improvements for the final version. However, if the particular task is not to be handed in again, and students are required to apply their skills on new assignments instead, they are likely to find feedback on their skills more useful. This may also mean that constructive feedback for future improvement can be overlooked by students on revision tasks, while feedback that deals only with the individual work at hand, and makes no comments on progress or development on assignments not to be revised, may be seen as useless. Taken together, giving students opportunities to use the feedback they receive seems to be an important prerequisite for an active use of feedback. Still, the mere opportunity or demand to use the feedback does not necessarily result in a productive use of the feedback. Instead, a number of obstacles for using the feedback formatively can be identified, some of which are outlined below.

Challenge 2: students prefer specific, detailed, and individualized feedback

In attempts to identify factors that may contribute to a more frequent use of feedback, several studies asked the students about their preferences. However, when comparing research on students' preferences to studies investigating students' actual use of the feedback, it becomes evident that the results are not always in agreement with each other. For example, although many students would prefer a lot of feedback (Auten, 1992; Hyland, 2000), when actually using the feedback, the length of the comments does not necessarily influence whether students address it, although longer comments may have a positive impact on revisions if used (Ferris, 1997; Treglia, 2009). Furthermore, less important (but frequent) comments sometimes overshadow more important feedback (Vardi, 2009), making the amount of feedback problematic. This conflict, between what students prefer and what is likely to contribute to productive learning, is a recurrent problem in the studies reviewed. For instance, students appreciate specific, detailed, and individualized comments on their own work (Auten, 1992; Ball et al., 2009; Carless, 2006; Chanock, 2000; Ferguson, 2011; Hedgcock and Lefkowitz, 1996; Higgins et al., 2002; Holmes and Papageorgiou, 2009; Hyland, 2000; Lipnevich and Smith, 2009; Pitts, 2005; Poulos and Mahony, 2008; Price et al., 2010; Rea and Cochrane, 2008;

Regan, 2010; Rice et al., 1994; Séror, 2009; Weaver, 2006; Whitington et al., 2004), and they make both more revisions and more accurate revisions if told exactly what to do (Baker and Hansen Bricker, 2010; Ferris, 1997; Sweeney, 1999; Vardi, 2009). Still, revisions based on such highly specific and directive feedback do not necessarily improve the quality of students' texts. Instead, there are indications that nondirective feedback and the use of nonindividualized feedback, such as model answers, are more effective in order to improve students' performance (Cho and MacArthur, 2010; Huxham, 2007). Another example is that many students prefer positive comments (Ferris, 1995; Lipnevich and Smith, 2009; Pitts, 2005; Rea and Cochrane, 2008), which have been reported to be quicker and more accurately recognized than negative comments (Baker and Hansen Bricker, 2010). Furthermore, students (especially those with low levels of self-esteem) might react negatively to overtly negative comments (Ferguson, 2011; Pitts, 2005; Poulos and Mahony, 2008; Rice et al., 1994; Weaver, 2006; Young, 2000). Still, positive comments have been shown to lead to less change (Ferris, 1997), and in order to improve, students also need critical comments (Drew, 2001; Higgins et al., 2002; Holmes and Papageorgiou, 2009; Whitington et al., 2004).

Grading (or marking) is yet another example of the conflict between students' preferences and their actual use of feedback. Students claim to appreciate grades, at least if they are accompanied with an explanation (Auten, 1992; Brown, 2007; Ferguson, 2011; Higgins et al., 2002; Rice et al., 1994; Walker, 2009; Whitington et al., 2004). Still, grades are problematic since they make the students less willing to challenge the teacher. Instead, many students do their best to comply with the teacher's comments, although this may sometimes compromise their own intentions with the text (Dessner, 1991; Dohrer, 1991; Hyland, 1998; Porte, 1996; Zhao, 2010), which makes grading one of the major obstacles for using feedback productively. Moreover, when the effort is perceived as potentially too large, many students abandon the tactics of compliance and strategically focus on making changes that they think will pay off in terms of grades (Dohrer, 1991; McDowell, 2008; Porte, 1996). This strategy typically changes students' focus away from larger, text-based revisions, toward smaller (and safer) surface revisions (Anglada, 1999; Ashwell, 2000; Beason, 1993; Chapin and Terdal, 1990; Paulus, 1999; Tagong, 1991; Williams, 2004), although there are studies where the distribution between surface-level and other changes are approximately similar or where there are very large variation between individual students (Beason, 1993; Ferris, 1997; Hyland, 2003). Besides complying with the teacher's suggestions, or taking the easy way out, other potential negative effects of grading can also be identified in the studies reviewed. For instance, receiving a low grade can have detrimental effects on the self-perception of students with low self-esteem, and students receiving high grades often do not read their feedback when they are satisfied with the grade awarded (Brown, 2007; Burke, 2007; Enginarlar, 1993; Goldstein, 2006; James, 2000; Lipnevich and Smith, 2009; Vardi, 2009). Taken together, the conflict between students' preferences and their actual use of feedback make it venturesome to specify factors that could improve the use of feedback, at least on the basis of what students' claim to appreciate. Consequently, although students prefer a lot of very specific, positive, and individualized feedback, as well as grades, providing such feedback may not necessarily help the students to learn and improve. Instead, there are indications that less-specific, detailed, and personal feedback, which requires the students to actively engage with the feedback (as opposed to strictly following the teacher's authoritative advice), may be more productive to learning.

Challenge 3: authoritative feedback is not productive

As is indicated above, teacher authority and grading may affect students' use of feedback, for instance, by contributing to strategies of compliance and avoidance. In order to avoid that students

strictly follow the teacher's authoritative advice, Dysthe et al. (2011) argue that teachers must insist on taking the part of a dialogue partner, rather than an authority in the classroom. In relation to feedback, this can be done by keeping away from using imperatives, by not having an insensitive tone, or by not giving mainly evaluative comments (Connors and Lunsford, 1993; Hyatt, 2005; Ivanič et al., 2000; Mutch, 2003). Instead, teachers need to communicate that the feedback is merely their point of view and that it could be open to dispute. Of course, even if insisting on taking the part of a dialogue partner, the teacher is still grading the students' performance, which means that there are parts of the teacher's authority that cannot be taken away or neglected. However, due to the fact that a number of students seem to be guessing what the teacher is grading (Dohrer, 1991), there appears to be a need for increased transparency in the grading process, so that the students know what is in fact assessed and graded. Otherwise, it is not possible for the students to take responsibility for their learning or coming on more equal terms with the teacher.

Challenge 4: students may lack of strategies for productive use of feedback

Another obstacle for using feedback productively is the lack of know-how. As shown by the research in this area, students may apply a number of different strategies for using their feedback. They may, for instance, write down points to remember for future assignments or make reflective analyses of teacher comments (Hyland, 2001; Martens and Dochy, 1997; Orsmond et al., 2005; Orsmond and Merry, 2011). A major predicament, however, is that this active use of feedback does not seem to be the primary choice for many students. For example, in a study by Furnborough and Truman (2009), less than half of the students actually used the feedback formatively. As becomes evident, albeit most students seem quite happy to get feedback, not all students possess fruitful strategies for dealing constructively with it (Furnborough and Truman, 2009; Porte, 1996). Rather, they adopt ad hoc procedures or refer to diffuse strategies, such as having to "work harder." Consequently, a number of students use the feedback *passively*, for instance, by making a "mental note" of the feedback; *indirectly*, for instance, by using the feedback as an indicator of progress or in order to motivate themselves (Holmes and Papageorgiou, 2009; Pokorny and Pickford, 2010; Williams and Kane, 2009); or *not at all*, for instance, by erasing the problematic issues raised by the teacher (Hyland, 1998). The students may also turn their attention to the teacher for further guidance (Bevan et al., 2008; Cohen, 1991; Cohen and Cavalcanti, 1990; Ferris, 1995). On the brighter side, students' revision skills have been shown to improve by giving explicit guidance on how to use feedback (Burke, 2007).

Challenge 5: students may lack an understanding of academic terminology or jargon

The fact that students do not understand the feedback they receive is yet another concern. This can be not only due to illegible writing, which seems to be a surprisingly common problem (Ball et al., 2009; Carless, 2006; Ferguson, 2011; Ferris, 1995; Higgins et al., 2002; Hyland, 2000; Price et al., 2010; Séror, 2009; Whitington et al., 2004), but also due to the use of academic terminology or technical jargon. As shown by the research reviewed, many students have problems understanding the meaning of the terms that teachers use, or the criteria that teachers make reference to (Carless, 2006; Chanock, 2000; Ferris, 1995; Hartley and Chesworth, 2000; Hedgcock and Lefkowitz, 1996; Higgins et al., 2002; Hounsell, 1987; Hyland, 2000; Lea and Street, 1998; McCune and Hounsell, 2005; Zhao, 2010), even when effort has been made to clarify the discourse (Price et al., 2010). As suggested by research, a way of becoming familiar with the academic discourse is by using model

answers or exemplars along with the feedback (Burke, 2007; Huxham, 2007; Orsmond et al., 2002) and by engaging the students with explicit assessment criteria, for instance, through marking schemes/scoring rubrics (Case, 2007; Pokorny and Pickford, 2010). This combination of experiencing how authentic work may look like (model answers or exemplars), and also the relevant language to make sense of these experiences (criteria and standards), is often appreciated by the students and provides them with more concrete manifestations of the criteria and standards, as opposed to only providing (abstract) words (Rust et al., 2003).

Another way to become familiar with the discourse, and thus to better understand the feedback, is the opportunity to engage in dialogue with the teacher—something that is also recognized by the students (Holmes and Papageorgiou, 2009; McCune and Hounsell, 2005), who claim to appreciate a combination of oral (preferably one-to-one) and written feedback (Drew, 2001; Duers and Brown, 2009; Hedgcock and Lefkowitz, 1994, 1996; Hyland, 2000; Pitts, 2005; Pokorny and Pickford, 2010; Rea and Cochrane, 2008; Reid, 2010). Still, the time constraints of most teachers would make individual dialogue with each student problematic. However, the use of audio feedback has been shown to bridge some of these difficulties (Harper, 2009; Pearce and Ackley, 1995), for instance, since students are more likely both to open audio files (as opposed to collecting written feedback) and to actually use the feedback (Ice et al., 2007; Lunt and Curran, 2010). Furthermore, the amount of feedback communicated to the students with audio feedback has been reported to be significantly greater than the amount communicated with written feedback, without being more time-consuming (Huang, 2000; Kirschner et al., 1991; Pearce and Ackley, 1995). While the use of audio feedback is appreciated by many students, changing the mode of delivery does not necessarily make a great difference on student performance (Kirschner et al., 1991; Morra and Asís, 2009). Taken together, although many students seem to lack an understanding of the academic discourse, there are several strategies suggested by research that have shown to be (more or less) effective in order to help students in this matter. The bottom line is that written feedback should not stand alone but be complemented with either more concrete manifestations of the criteria and standards, or with more extended or dialogic feedback. In the latter case, audio feedback seems to offer some promising possibilities, without necessarily increasing the workload of teachers.

Concluding comments

This review started out by noting that feedback not only holds great potential for student learning but also that in order to be productive, the feedback must be used by the students. A number of students, however, do not use the feedback they receive, and consequently do not realize the formative potential of feedback. The purpose of this study was therefore to gain insight as to why some students do not use the feedback they receive and how a more productive use of feedback can be promoted. This was done by reviewing and analyzing research on students' use of feedback, in pursuit of factors influencing their use of feedback. As shown by the review, there are many different factors (relating to the teacher, the content of the feedback, the mode of delivery, the context, the timing, the students themselves, etc.) that may affect students' use of feedback. However, there are also a smaller number of factors that are recognized as important in most of the studies on this topic, seemingly regardless of, for instance, academic subject or feedback considered. These latter factors have been presented as five themes, including commonly reported obstacles for using feedback productively, as well as possible ways to promote a formative use of the feedback. As can be seen from these findings, one of the major barriers for using feedback formatively is that students do not find the feedback useful, for instance, because the revision of assignments (or application of feedback on similar assignments) is not asked for. Another problem is the lack of congruence

between students' preferences for feedback and the kinds of feedback that actually seem to aid them in using it productively. The optimal feedback for formative use may therefore not necessarily be specific, detailed, positive, and individualized, as is often assumed (Gibbs and Simpson, 2004–2005; Race, 2007). Instead, less specific and individualized feedback, which forces the students to actively engage with the information, may actually be more productive for student learning. Yet, another barrier for using feedback formatively is the authority expressed through the feedback, which has been noted in a number of studies. This is because some students do not dispute authoritative feedback and may choose to avoid difficult and cumbersome revisions, focusing on form and mechanics instead, since these revisions are easier and safer. A similar tendency has been observed for grades and marks.

The abovementioned barriers for using feedback all relate to the provision of feedback and can be amended by the teacher to a large extent, for instance, by allowing the students to use the feedback by handing in a revised task or by not using authoritative language. Other factors depend more heavily on the students. Such factors are the lack of strategies among the students for using the feedback they receive and the lack of understanding of the academic terminology. Obviously, if the students do not know what to do with the feedback, or do not understand it, then asking for revisions will not help. To overcome these barriers, larger and more structurally oriented changes are probably needed. As an example, it has been suggested that students need to be taught strategies for how to use feedback productively, for instance, through workshops, which may not always be a regular part of higher education (Burke, 2009). Others go further still, by making the use of feedback an integrated part of instruction. Pryor and Crossouard (2010) describe a structuring of tasks that involves not only teacher feedback but also peer assessment and peer feedback on drafts at regular intervals in the writing process. Such a structuring, which alternates with teacher and peer feedback, would not only provide the possibility to get timely feedback (without necessarily increasing the workload for the teachers), but the students would also produce feedback. Since producing feedback is likely to be more demanding than just receiving it, this could enhance student engagement—including engagement with assessment criteria—and responsibility in the feedback process (Hounsell, 2003; Nicol, 2010). According to Sadler (2010), peer assessment is also the most natural way to provide the desired combination of tacit and explicit knowledge transfer, which is needed in order for students to "convert feedback statements into actions for improvement" (p. 537). By giving the same task to all students, and then letting them assess each others' solutions, would give practice in applying criteria to a spectrum of solutions of (presumably) varying quality, which in turn is an important prerequisite for discerning the qualities aimed for.

Even if the abovementioned themes transcend many of the studies reviewed and therefore could be expected to have some generalizability in the field of teaching in higher education, it should be acknowledged that a very small number of studies were found that investigated students' actual use of feedback. Instead, most studies rely almost solely on students' statements. Consequently, there is a major call for future research where students' strategies for using feedback are investigated in vivo. Furthermore, although a great number of factors were found to influence students' use of feedback, there were often only one or two studies investigating each factor, making it difficult to identify any patterns. Moreover, in a number of cases, the results from different studies were contradictory. This calls for more studies investigating the influence of these factors, such as students' self-esteem or the use of standardized feedback forms. There were also few studies found where students' use of feedback was investigated in relation to modern information and communication technology (ICT), such as emails, text messages, blogs, and so on. Of course, the lack of studies in this area can, at least in part, be an effect of the methodology used, for instance, if these studies are

done in more technical (or other less educational) contexts and therefore use a different terminology and are not referred to in the articles found.

With these limitations in mind, a tentative conclusion from this review is that, in order to aid students in using feedback more productively, the transmission model of feedback, where the teacher passes on information to the student, needs to be replaced with a more active and dialogic model of feedback. In this model, both receiving and using feedback are integral parts of instruction, for instance, by letting the students use feedback to revise their work or apply the feedback on similar assignments. However, in this model, they are not left to do this entirely on their own. Instead, the productive use of feedback is scaffolded through a number of different means, such as the use of model answers, exemplars and explicit criteria and standards, along with workshops and group work focusing on strategies for using feedback formatively.

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