Tutor Training, Evaluation Criteria and Teaching Environment Influence Students' Ratings of Tutor Feedback in Problem-Based Learning

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Abstract. *Aim:* In a problem-based learning (PBL) curriculum, tutor's feedback skills are important. However, evaluation studies often show that students rate many tutors as ineffective in providing feedback. We explored whether this is related: (a) to tutors' skills, and hence a teaching intervention might improve their performance; (b) to the formulation of the evaluation item, hence a more specific wording might help students better recognize a feedback when received; (c) to PBL teaching environment, and hence the tutors' teaching unit might influence students' ratings. *Methods:* Students rated 126 tutors of 13 one-month teaching units over three consecutive years on their ability of providing feedback. We assessed how (a) a teaching intervention given between years 1 and 2, (b) a rewording of the evaluation item which took place in year 3, and (c) the tutors' teaching unit, influenced students' ratings. *Results:* The ratings of tutors considered as effective by students at year 1 improved after the teaching intervention, while those of unsatisfactory tutors did not progress. However the ratings of the latter increased after reformulation of the evaluation item. This increase varied across teaching units. *Discussion:* Students' ratings of tutors' ability to give feedback seem to vary in function of the tutors' training, of the formulation of the evaluation item, and of the tutors' teaching environment. These variables should be considered for setting up effective strategies in faculty development.

Key words: evaluation questionnaire, faculty-development workshop, giving feedback, problem-based-learning process, teaching unit, tutor performance

Introduction

Feedback is an essential component of learning. It reinforces knowledge and skills and corrects learner's errors (Blair et al., 1968). The awareness of its importance in medical education is increasing and many recommendations are provided to educators on how to give effective feedback (Ende, 1983; Sachdeva, 1996; Kaprielan and Gradison, 1998; Hewson and Little, 1998; Wood, 2000; Branch and Paranjape, 2002). However, whereas faculty members think they provide regular and effective feedback, students often complain about not receiving enough feedback and consistently rate their teachers lower on providing feedback compared to other teaching skills (Gil et al., 1984; Irby and Rakestraw, 1981; Baroffio et al., 1999; Parikh et al., 2001).

At the University of Geneva Faculty of Medicine, we introduced an integrated six-year problem-based curriculum in 1995 (Vu et al., 1997). From our program evaluation, we also noticed that students consistently gave low ratings to about 65% of their tutors on their ability to provide feedback during the preclinical years (2nd and 3rd years). However, in a survey we recently conducted to design faculty development workshops we found that, even if they were rated low, very few tutors (less than 3%) identified the ability to give feedback as a tutorial skill for which they needed further training. Moreover, after an earlier workshop that we designed to assist tutors in working on tutorial situations identified as difficult, we found that most tutors obtained higher students' ratings on their overall tutorial performance as well as on specific tutorial skills, but not on their ability to provide feedback (Baroffio et al., 1999).

In order to explore the reasons of why students rate poorly their tutors on feedback, we investigated whether it might be related (a) to tutors' skills in providing feedback, (b) to the formulation of the evaluation item, and (c) to PBL teaching unit context. To that end, we first assessed whether a teaching intervention, aimed at developing tutors' awareness of the utility of giving feedback in PBL and their ability to provide it, would improve their performance and hence their students' ratings (hypothesis a). Second, we tested whether a more specific formulation of our evaluation item, might enable students to better recognize feedback when received (hypothesis b). Finally, we explored the relative importance of the tutors' teaching units that may influence students' ratings of tutors (Baroffio et al., 2006) (hypothesis c). We found that tutors rated as effective by students on year 1 improved after the teaching intervention, while those rated as unsatisfactory did not progress. However the ratings of the latter increased after reformulation of the evaluation item, and this increase varied across and in function of the teaching units.

Methods

CONTEXT AND SUBJECTS

This study was conducted successively with three different classes of preclinical students over the academic years of 1998–1999 (year 1), 1999–2000 (year 2), and 2000–2001 (year 3). Each class consists of about 150 students. Our pre-clerkship curriculum is composed of 13 thematic teaching units (e.g. circulation, nutrition and digestion, infectious disease, etc). Each unit takes place once a year, lasts 4 weeks, and consists of 16 2-hour tutorial sessions. Each tutor follows the same group of students (mean: 7 students, range: 4–15) during one unit. Students rate their tutor at the end of each teaching unit. For this study, out of 203 preclinical tutors, we chose the 126 tutors who taught consistently during the three successive years of the study.

To test hypothesis (a), 96 tutors out of 126 attended an advanced tutor workshop during the 1999–2000 academic year (i.e. between year 1 and year 2 of the study), during which they received a teaching intervention on different aspects of giving feedback. Thirty tutors could not attend the workshop for various reasons (mainly scheduling conflicts), thus constituting a convenience control group. To test hypothesis (b), we reformulated the item of the evaluation questionnaire concerning the tutors' ability to give feedback during the 2000–2001 academic year (i.e. year 3, see below). To test hypothesis (c), we analyzed the relative impact of the 13 teaching units on students' ratings of their respective tutors.

TEACHING INTERVENTION ON GIVING FEEDBACK

The first part of this 3-h workshop focused on the tutors' functioning within their specific teaching unit and context and a second part was dedicated to the management of difficult group-dynamic situations. The outcomes of these two parts are described in another paper (Baroffio et al., 2006). A third part, lasting about one hour, consisted of a brief intervention on different aspects of giving feedback. Tutors were first asked to exchange their perceptions on the purposes of providing feedback and its utility in PBL tutorials. Then, they were presented a tutorial model in which tutors are functioning as coaches to their students with regard to their learning and group functioning. Finally, different strategies were discussed on how to give an effective feedback to students (Ende, 1983; Hewson and Little, 1998; Wood, 2000), such as asking students about their own perception on how they learned and functioned in the group, providing them with more frequent feedback, using observations and not judgments, or encouraging the group of students to analyze their functioning.

INSTRUMENTS AND OUTCOMES MEASURES

(a) Tutors' evaluation of the feedback training

At the end of the workshop, participants evaluated on a 5-point Likert scale the different parts of the workshop. Concerning the part on feedback, they rated whether the intervention (a) was well organized, (b) furthered their awareness of the purpose of giving feedback, (c) furthered their understanding of the utility of giving feedback in PBL, and (d) provided useful strategies on how to provide feedback to students.

(b) Tutors' self-assessment of changes in teaching strategies

During year 3, we sent a questionnaire to the workshop participants in order to investigate the changes they adopted as tutors regarding providing feedback to students. Forty-one out of 96 (56%) returned the self-assessment questionnaire. The questionnaire consisted of dichotomous yes/no items (e.g. I have changed my perception of what feedback is, I give more constructive feedback, I am using new strategies in providing feedback) and of open questions allowing the tutors to freely comment on the new strategies they had adopted.

(c) Students' ratings of tutor ability to give feedback

The tutor's evaluation questionnaire has been adapted from the one developed and validated at the Maastricht medical school (Dolmans et al., 1994) and has been described in an earlier paper (Baroffio et al., 1999). It consists of 11 items pertaining to the evaluation of the tutor and 5 to the group functioning. For this study, the tutor overall rating is the average rating derived from the 11 items and the tutor ability to give feedback is derived from the 1 evaluation item pertaining to this aspect. The items are rated on a 5-point Likert scale [(5) completely agree to (1) completely disagree]. We consider a rating ≥4 as satisfactory.

REFORMULATION OF THE EVALUATION ITEM ON FEEDBACK

During years 1 and 2 of the study, the feedback evaluation item was labelled: «My tutor provides me with a regular feedback». Following our observations that it may be unclear to students, it was modified on year 3 (academic year 2000–2001) to "My tutor provides me/us with a regular feedback, e.g. suggestions, comments". The "us" was added to make clear that feedback can be provided to the whole group as well as individually, and the "e.g. suggestions, comments" to clarify the ways tutors can give feedback.

ANALYSES

The data consisted of a total of 4158 students' ratings (126 tutors rated on 11 items and during three consecutive years).

To evaluate the effect of the teaching intervention on students' ratings of feedback (hypothesis (a), we used a quasi-experimental design by comparing students' ratings of the 30 tutors who had no intervention to those of the 96 tutors who had the intervention. We analyzed the control and intervention groups for each study year (years 1, 2, and 3 respectively) by Mann–Whittney rank sum tests for independent samples. The same analysis was performed for the subpopulations of tutors rated unsatisfactory before the intervention (low-baseline: rated below 4) and satisfactory before the intervention (high-baseline: rated over or equal to 4). We conducted univariate analyses of variance (ANOVAs) to explore the relative importance of the teaching intervention and of the teaching units (hypothesis a and c) on students' ratings. For this purpose, we built a model to predict the feedback ratings one month (i.e. on year 2) and one year (i.e. on year 3) after the teaching intervention (dependent variable), using the teaching intervention, the tutors' teaching unit and the tutors' baseline ratings (as a string variable: low and high) as between-subject factors, and teaching experience (number of years of PBL teaching at the onset of the study) as a covariate (SPSS version 11.0, Chicago).

To assess whether tutors' self-perception of change is linked to students'-rated improvements, we measured Pearson correlations between the students' rated changes (difference between students' feedback ratings on year 1 and year 3) and the tutors' self-assessments for the 41 tutors who returned the self-assessment questionnaire.

To evaluate the effect of item reformulation on students' ratings of feedback (hypothesis b), we compared students' ratings of the 30 tutors who had no teaching intervention, before (years 1 and 2) and after item change (year 3). Ratings were analyzed using related samples Friedman non-parametric tests. Proportions of tutors being rated ≥ 4 were compared with Mac Nemar tests.

To estimate the relative effects of the teaching intervention and the item formulation, we analyzed tutor feedback ratings over the three years using related samples Friedman non-parametric tests for the whole sample and for each of the subgroups (i.e. control, intervention, low baseline and high baseline tutors).

We considered an alpha value under 0.05 significant for all analyses.

Results

TUTORS' EVALUATION OF THE TEACHING INTERVENTION

Overall, the teaching intervention was considered well organized (4.44 ± 0.67). It was judged helpful in furthering tutors' awareness of the purpose

of giving feedback (4.20 ± 0.82) and their understanding of the utility of feedback in the tutorial process (4.22 ± 0.83). It also provided them with useful strategies to give a constructive feedback to students (4.21 ± 0.86).

TUTORS' SELF-ASSESSMENT OF CHANGES IN THEIR FEEDBACK PERCEPTION

One year after the intervention, 37% of these tutors reported having modified their perception of what feedback represents and essentially integrated the tutor role as a coach. Forty-six percent mentioned that they were able to give a better and more constructive feedback. Most used strategies included, for example, (1) giving feedback more systematically and more often, (2) choosing the right moment, (3) asking student about his/her own perception, (4) providing positive and personalized comments, and (5) facilitating a regular analysis of the functioning of the students' group.

STUDENTS' RATINGS OF TUTOR' ABILITY TO GIVE FEEDBACK

A – Effect of the teaching intervention and of the teaching unit on feedback ratings

Teaching experience was similar between the control and intervention group (all tutors: 2.8 ± 0.9 vs. 2.6 ± 1.0 years; low-baseline tutors: 2.6 ± 0.9 vs. 2.3 ± 1.0; high-baseline tutors: 3.1 ± 0.7 vs. 3.1 ± 1.1). As shown in Table I, before the workshop intervention (year 1), tutors of the control and intervention groups were rated identically by the students, regardless of their baseline ratings. One month after the intervention (year 2), tutors of the control and intervention groups were still rated identically by the students, although a decrease in students' ratings was noted for high-baseline tutors. One year after the intervention (year 3), only high-baseline tutors who had attended the workshop received significantly higher ratings than those who had not attended.

The analyses of variance confirmed that the teaching intervention had no effect on the feedback ratings obtained at one month (year 2). It also showed that no other factor (teaching unit and teaching experience) had a significant influence. However one year after the teaching intervention (year 3), tutors' feedback ratings were dependent on their teaching unit and on the interaction between their attending the workshop and respective baseline ratings (Table II; all tutors: model explaining 53% of the variance). To further understand the interaction effect, we performed a variance analysis on the two baseline subgroups (Table II; low and high baseline tutors: 51 and 64% of the variance explained respectively). It showed that the teaching intervention on feedback only acted on the performance of high-baseline tutors, whereas it had no effect on the performance of low-baseline tutors. On the other hand, the tutors'

Table I. Comparison of students' ratings of 126 tutors' skill in giving feedback before (year 1) and after (years 2 and 3) a teaching intervention on giving feedback, according to intervention and baseline ratings

	N	Baseline	After teaching intervention		p^b
		Year 1	Year 2	Year 3	
All	126				
No intervention	30	3.7 ± 0.6	3.6 ± 0.6	4.4 ± 0.6	0.000*
Intervention	96	3.6 ± 0.8	3.7 ± 0.7	4.4 ± 0.6	0.000*
p^a		0.651	0.468	0.317	
Low baseline (< 4)	82				
No intervention	20	3.3 ± 0.4	3.5 ± 0.5	4.4 ± 0.6	0.000*
Intervention	62	3.1 ± 0.6	3.5 ± 0.8	4.3 ± 0.7	0.000*
p^a		0.242	0.918	0.815	
High baseline (≥4)	44				
No intervention	10	4.4 ± 0.2	3.8 ± 0.5	4.3 ± 0.4	0.067
Intervention	34	4.4 ± 0.3	4.0 ± 0.5	4.7 ± 0.3	0.000*
p^a		0.977	0.432	0.017*	

[a]Mann–Whittney rank sum test for independent samples.
[b]Non-parametric Friedman test for related samples.

teaching unit had no influence on the improvement of high-baseline tutors but acted on the progression of low-baseline tutors. Figure 1 illustrates this finding. For example, the 14 unsatisfactory tutors of unit E (on a total of 14 tutors) improved whereas the 7 (out of 7) of unit J did not progress. The 5 unsatisfactory tutors of unit A (on a total of 10 tutors) did not improve, the 4 (out of 8) of unit H increased moderately, and the 7 (out of 14) of unit G largely increased their ratings.

B – Correlation between tutors' self-rated improvement and students' rated improvement

The feedback score change as rated by students was not correlated with tutors' self-assessment of having changed their perception of feedback (−0.027) and having tested new strategies (0.081). In addition, it was inversely correlated with tutors' self-assessment of having provided a better feedback (−0.363; p: 0.05).

Table II. Model of univariate analysis of variance exploring the relative importance of teaching intervention, baseline ratings, teaching unit, and teaching experience on the feedback ratings one year after the teaching intervention

	Mean squares				Model R squared
	df	S	F	p	
All (n = 126)					
Teaching intervention	1/84	0.220	0.922	0.340	0.535
Teaching unit	12/84	1.010	4.240	<0.0001*	
Baseline ratings	1/84	0.057	0.240	0.625	
Teaching experience	1/84	0.032	0.133	0.716	
Teaching intervention × teaching unit	10/84	0.151	0.649	0.769	
Teaching intervention × baseline ratings	1/84	1.742	7.312	0.008*	
Teaching unit × baseline ratings	10/84	0.164	0.687	0.734	
Low baseline (n = 82)					
Teaching intervention	1/59	0.292	0.985	0.325	0.511
Teaching unit	12/59	0.936	3.161	0.002*	
Teaching experience	1/59	0.249	0.842	0.363	
Teaching intervention × teaching unit	8/59	0.298	1.005	0.442	
High baseline (n = 44)					
Teaching intervention	1/24	0.921	10.692	0.003*	0.637
Teaching unit	10/24	0.139	1.614	0.162	
Teaching experience	1/24	0.250	2.900	0.101	
Teaching intervention × teaching unit	7/24	0.191	2.218	0.069	

All factors and interactions were tested. Interactions are designated by ×.

C – Effect of the item reformulation on feedback ratings

The global average rating of the 30 tutors who did not receive the teaching intervention on giving feedback (control group) remained stable over the three years (Table III). However, their specific feedback ratings increased significantly on year 3 after the item change ($p < 0.0001$). The proportion of tutors rated satisfactory by students was about 30% with the original formulation. It increased to 87% after the reformulation of the item ($p < 0.0001$).

D – Relative effects of the teaching intervention and of the item reformulation on feedback ratings

Students' ratings of low baseline tutors increased on year 3 as a result of item reformulation and not of the teaching intervention (Tables I and II). In
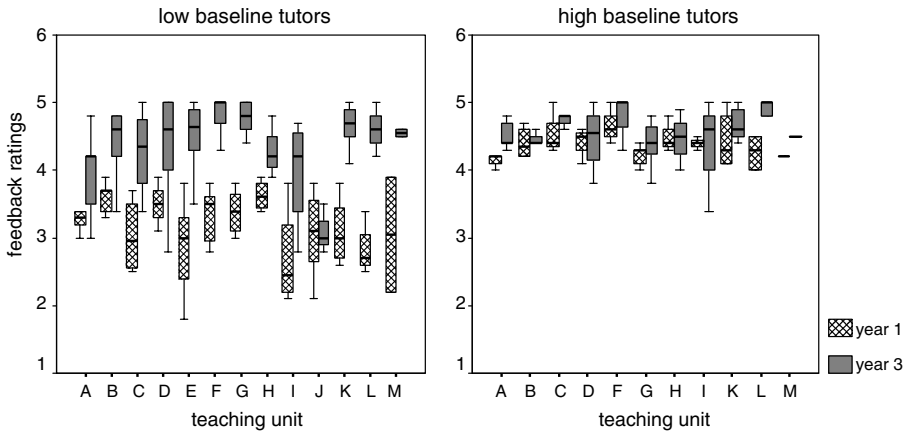
Figure 1. Influence of the tutors' teaching unit on the change of feedback ratings for low- and high- baseline tutors. Box and whisker plot of tutors' feedback ratings on year 1 and year 3 for 126 tutors according to their teaching unit and their baseline ratings. Depending on their teaching units, low-baseline tutors may improve (Units F, G, K, L) or not (Units A and J) the feedback ratings they receive from their students. The teaching unit does not influence the feedback ratings of high-baseline tutors. (N by teaching unit [low/high]: A [5/5], B [9/4], C [4/3], D [5/4], E [14/0*], F [7/3], G [7/7], H [4/4], I [4/3], J [7/0*], K [11/5], L [3/6], M [2/1] *not shown).

Table III. Comparison of students' ratings of 30 tutors before (years 1 and 2) and after (year 3) item reformulation

	Feedback item reformulation			p
	Year 1	Year 2	Year 3	
Tutor average rating[a] (mean ± SD)	4.4 ± 0.4	4.3 ± 0.5	4.3 ± 0.6	[c]0.803
Feedback rating (mean ± SD)	3.7 ± 0.6	3.6 ± 0.6	4.4 ± 0.6	[c] < 0.0001*
% Satisfactory tutors for feedback[b] (95% confidence intervals)	33 (19–51)	27 (14–44)	87 (70–95)	[d] < 0.0001*

[a]On 11 items evaluating different domains, like ability to guide students in PBL, content knowledge, interest in students' learning, skill in giving feedback, etc.
[b]Rated ≥4.
[c]Non-parametric Friedman test for related samples.
[d]Mac Nemar test for related samples.

contrast, the ratings of high baseline tutors appeared not to be influenced by item reformulation (Table I: no change on year 3 for the control group) and only increased for those tutors who had attended the intervention (Tables I and II).

Discussion

This study provides insights into several reasons of why students rate poorly their tutors on feedback.

First, tutors may provide insufficient feedback, since they are not aware of the utility of feedback in PBL or do not possess the strategies to give it. Our one-hour teaching intervention first explored the perception of tutors about their role and about the function of feedback in PBL. In our case, tutors had not perceived the need to be trained in giving feedback: while about 70% of them were rated low by students on their ability to provide feedback, very few (less than 3%) identified it as a tutorial skill for which they needed further training. This suggests that faculty development programs may work even when they address areas for which the need of improvement has not been explicitly identified. Overall, the workshop was highly rated by the tutors in terms of its quality and pertinence. In addition, it also provided the tutors with a panoply of pragmatic strategies on how to prepare and give feedback. After the workshop, one third of the tutors estimated having changed their perception about feedback and being more aware on how feedback can enhance students' learning, and about one half of the tutors felt more adequate in providing students with feedback. However, the tutors' self-perception was not confirmed by the ratings they received from the students.

Concerning the effect of the teaching intervention, it was found that it did improve the students' ratings of tutors but more specifically for those who were rated as effective before the workshop. While still unexplained we noted a decrease in students' ratings one month after the intervention for both the control and intervention groups. However, one year after the workshop, the intervention group was rated significantly better than the control group. This difference represents an almost 10% increase and is even more significant because of the ceiling effect of the Likert scale. This finding is in agreement with other studies showing that specific trainings can improve tutors' ability to give feedback and students' satisfaction ratings (Barratt et al., 2004; Salerno et al., 2002; Stone et al., 2003). According to our results, the delay of one month may not have been long enough to observe a progression, while after one year, it is observable. This suggests that tutors may need to practice and self-reflect to incorporate new teaching strategies into their existing repertoire and to improve teaching performance. Alternatively, we cannot exclude that our instrument (i.e. the evaluation item on feedback) was not able to detect the progression before it was reformulated.

If the teaching intervention proved to be useful for the effective tutors, it seemed unproductive for those initially considered unsatisfactory. It is already known that tutors' baseline performance can affect to a certain extent

the effectiveness of a teaching intervention (Baroffio et al., 2006; Litzelman et al., 1998). Low-rated tutors, like low-performers in different other fields, may fail to recognize their insufficiencies and lack the skills necessary to change (Eva et al., 2004; Kruger and Dunning, 1999). In addition, the fact that students' ratings did not confirm tutors' self-assessments further validates this hypothesis.

The second explanation of the poor students' ratings of tutors' ability to give feedback could be that students might not recognize a feedback when in fact it has been provided by the tutors (Bing-You et al., 1998; Kogan et al., 2000). We suggest that a more explicit reformulation of the questionnaire item assessing the tutors' feedback may increase students' perception of the feedback they receive. This complements previous approaches which have been implemented in order to make students more aware of the feedback they receive. These include coaching students in actively obtaining feedback (Bing-You et al., 1998), sending daily email to students about the feedback received on that particular day (Kogan et al., 2000), having faculty filling short notes (Schum & Krippendorf, 2000) or encounter cards (Paukert et al., 2002) solicited by students. All these procedures seem to increase students' awareness and satisfaction about receiving feedback from their tutors. In our case, there was probably confusion between the personal feedback received by individual students and the feedback provided by the tutor to the whole group. This may explain why by adding "us" to "me" on the item could clarify the intent of the item. Another reason could be a poor understanding of students about what does "feedback" mean and represent in practice. Hence the positive effect could also result from providing exemplifying instances of feedback which can occur during a tutorial. Apparently, this reformulation did not change the ratings given to effective tutors, suggesting that their feedback was already clearly recognized by the students. However, the reformulation helped changing students' perception of unsatisfactory tutors and improving their ratings. This result suggests that these tutors might tend to provide feedback to the group rather than to individual students, and/ or not explicitly providing the feedback so that it is recognized as such.

Concerning the third possibility, we found that the context or unit in which the tutorials were given did influence the performance of unsatisfactory tutors. Teaching units differ on several aspects: the teaching theme, tutors' backgrounds (clinicians, basic scientists, practitioners...), tutors' preparation to the teaching theme through regular meetings, internal dynamics of the tutors' group to solve common problems, in particular by exchanging strategies, unit's leadership, proportion of unsatisfactory tutors, etc. All these factors might affect tutors' performance. We recently

demonstrated (Baroffio et al., 2006) that the teaching unit seemed to influence various tutors' competencies, such as their problem-content knowledge and ability to guide students' learning. We also found in contrast to the present findings, that unsatisfactory tutors were able to improve on these skills following the teaching intervention. This may signify that unsatisfactory tutors depend on the dynamics of their teaching unit in order to improve but that this dynamics influences more cognitive aspects, such as the preparation of the problems, than personal and reflective skills, such as the ability to give feedback. An important issue pertains to the strategies to use with those tutors who really need an improvement in their ability to give feedback. A short intervention is obviously not sufficient without an action on the internal dynamics of the teaching unit. This approach may improve their organizational vitality and their functioning, for example through more frequent tutor meetings (Baroffio et al., 2006). It might also be important to provide these tutors with some opportunity to practice under supervision in order to improve their tutoring skills and develop self-assessment (Kruger and Dunning, 1999).

This study has several limitations. First, it tested two interventions (tutor training and item reformulation) on the same group of tutors. Although this has been taken into account in our analysis, it may have diminished the robustness of the results. Second, it is based on students' ratings and tutors' self-assessments only, without an external observation of tutor performance by peers or experts, which would have added validity to the measurements. Finally, it was conducted at one institution only, thus limiting the generalization of the results.

In conclusion, we explored three reasons that may explain why students rate poorly their tutors on feedback: tutors' insufficient or lack of competency in giving feedback, students' recognition of a feedback when given, and tutor's teaching context. Regarding tutors' skills, their ratings may improve when they become more conscious of the use of feedback in PBL or enrich their strategies for giving feedback. However, this process does not take place for less effective tutors who may need additional assistance and practice. On the other hand, an imprecise formulation of the tutor evaluation questionnaire items may prevent the students from really understanding what feedback represents in practice. A simple intervention, like a more explicit and concrete formulation of feedback items, increases the students' perception of the feedback they actually receive, at least from those tutors they initially considered less effective. Finally the teaching environment or unit might directly or indirectly affect the quality of tutorial skills. Strategies in faculty development should thus take these different factors in consideration to be really effective.

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