The value of feedback in improving collaborative writing assignments in an online learning environment

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This exploratory study aims to analyse the nature of teacher feedback during a collaborative writing assignment, and to identify the possible effects feedback has on the revision of a text written by university students in an asynchronous online learning environment. Under analysis are three editions of a master’s course in e-learning, during which, over a period of two weeks, the students \( (n = 83) \) divided into 16 work groups to carry out a co-evaluation assignment with the support of a technology tool. The results obtained indicate that, when teacher feedback includes suggestions and questions, instead of direct corrections, the students respond more constructively, they discuss the content they are working with, and, as a result, they effect significant changes in the arguments of the text they are revising.

**Keywords:** online collaborative writing; assessment of learning; feedback; regulation of learning; online learning environment

**Introduction**

In an academic setting, writing is in itself a task requiring a high level of cognitive competencies, such as the student being able to self-regulate his/her own learning process (Bangert-Drowns, Hurley, and Wilkinson 2004). Following Dysthe (2001, 2), ‘learning to become a better writer happens in the same way that learning to become a better thinker does. Writing is thinking-made-tangible’.

Within the framework of collaborative writing, one of the most complex challenges is writing a text in conjunction with others, given that writing activities are usually self-planned and entail personal initiative and constant effort. One of the objectives of collaborative writing is to promote the exchange of thoughts and ideas with each other. As Anson (1999, 269) notes, the teaching of writing ‘is founded on the assumption that students learn well by reading and writing with each other, responding to each other’s drafts, negotiating revisions, discussing ideas, sharing perspectives, and finding some level of trust as collaborators in their mutual development. Teaching in such contexts is interpersonal and interactive, necessitating small class size and a positive relationship between the teacher and the students’.

According to our conceptualisation of learning, based on the socio-constructivist approach, we consider that argumentative strategies determine the quality of a collaborative text. In this sense, we highlight the contributions made by Reznitskaya et al. (2008), who describe an argumentative schema, Argument Schema Theory (AST), in which participants in a discussion organise the information (elaborate relevant

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arguments) and recover this information to elaborate new arguments. It is thus assumed that the knowledge resulting from group discussion during collaborative assignments is essentially dialogical, and reveals social influences during the development of reasoning.

Furthermore, being competent in writing processes is clearly advantageous with regard to oral communication, especially in terms of planning and reflecting on discourse itself (Garrison and Anderson 2003). Online teaching and learning environments, based on this type of communication, make it possible to overcome the challenges posed by face-to-face settings in the construction of a collaborative text (Kirschner 2001). This is a factor which can benefit both teachers and students involved in collaborative writing. As they become more familiar with the assignment and the technology tools, the students are more able to exploit the characteristics of the technology system supporting the collaborative writing assignment, and to take advantage of it in a creative manner (Posner, Mitchell, and Baecker 1996).

To promote collaborative writing in an online teaching and learning environment, teachers may resort to feedback (Wolsey 2008). Following Shute (2008, 154), we use the concept ‘formative feedback’, which we understand as ‘information communicated to the learner that is intended to modify his or her thinking or behaviour for the purpose of improving learning’. In this sense, we share Nicol and Macfarlane-Dick’s (2006, 200) definition: ‘feedback is information about how the student’s present state (of learning and performance) relates to these goals and standards’.

This concept of feedback proves especially useful when thinking of assessment as a formative process; that is, when the intention behind the assessment is to offer the students an opportunity to reflect on their learning experience. In this process, both the teacher and the students work jointly during the assessment of the learning results. This is different to other assessment types where student assessment is also taken into account, such as self-assessment or pair assessment: during co-assessment, the teacher shares the responsibility to assess with the students, but still supervises the revision process and finally marks the results. However, the teacher attempts to make the process more transparent by offering a more qualitative feedback, or even the possibility of discussing his/her opinions with the students. This promotes the desire to improve the learning results and also increase the capacity for self-regulation (Dochy, Segers, and Sluijsmans 1999; Topping 1998).

However, not all types of feedback help students become more competent in collaborative writing assignments; that is to say, for feedback to achieve this goal, certain conditions need to be met. In this regard, the main framework for our investigation is the characteristics of feedback which facilitates writing processes in online learning environments.

Feedback plays cognitive, metacognitive and motivational functions (Narciss and Huth 2004; Nicol and Macfarlane-Dick 2006). In this study the stress will be given to the cognitive and metacognitive functions.

According to Kulhavy and Stock (1989), in order to promote learning the content of feedback needs to contain two components: an answer verification component, that is, it must offer the students information on what was wrong and right, as well as information on the correct answer; and an elaboration component, which offers students information beyond the errors and the correct answer, and which will enable them to move forward in their learning process so as to progressively achieve more autonomy (Espasa and Meneses 2010; Kulhavy and Stock 1989). The latter component incorporates the formative character of evaluation; that is, the quality of continued improvement
of the learning process, which is necessary in any learning process (Allal 1979; Perrenaud 1998), but even more so in online teaching environments (as asynchronous and written communication scenario), where the teacher demands evidence that the student is progressively assimilating the learning content (Reeves 2000).

Whilst the results from previous research draw conclusions on the effect feedback has on learning (Blignaut and Trollip 2003, Devere 2008, Nelson and Schunn 2009; Snack et al. 2003; Van der Pol et al. 2008; Zen 2008), few researches have focused on how feedback impacts on assignments specifically requiring the writing of an essay.

Kirschner, Van den Brink, and Meester (1991) analysed the results from two groups of students, one of which received audio-cassette feedback whilst the other received written feedback. Given the small numbers in their research, the authors concluded that there were no significant differences between the two groups in terms of performance, although the students receiving audio feedback described a more positive experience than those receiving written feedback.

Tuzi (2004) focuses on feedback in relation to second language learning. His results lead us to conclude that, even though students value oral feedback, when they do receive written feedback the effect on the essay is noticeable. In relation to this, the changes effected by the students after receiving e-feedback – feedback in digital, written form and transmitted via the Web – tend to serve two functions: to make clear some fragments in the text that may cause confusion, and to add new information to the text. Although the article does not offer any more information on these types of changes, the author maintains that they encourage students to reflect and revise the texts continuously.

Apart from this line of research centred on language learning, we have found no other evidence on the nature of the feedback which promotes improvement in learning collaborative writing in an asynchronous online learning environment. Thus, the present research aims to help understand the characteristics of this type of feedback and what relationship it has with changes made to the text. The results obtained will lead to improvements to online teaching practice, as, on the one hand, they will show the importance of writing practices in online teaching–learning environments, and of offering the students strategies to help them with the collaborative writing tasks; and, on the other hand, the results will offer guidance to both teachers and students on how to assess formatively in an online environment.

**Methodology**

In view of the exploratory nature of this study, and its context specificity, the naturalistic orientation of interpretative, qualitative research is an appropriate choice. The interpretative approach will help the researchers to explain from an insider’s view why things have happened (Denzin and Lincoln 2000). This includes developing a description of an individual or setting by looking at the issue from different perspectives, analysing data by themes or categories, and finally making an interpretation or drawing conclusions about the meaning personally and theoretically. The research questions of this study are:

- What characteristics does teacher feedback have in a collaborative writing assignment in an online learning environment?
- What effect does feedback have on the revision of a text within the framework of a collaborative writing task in a virtual environment?
Data collection

This research studies the evaluation activity taking place within a course in the e-learning master’s programme (3 ECTS), in the virtual campus of the Open University of Catalonia. This university has been fully online since its foundation (more information about its pedagogic and assessment model can be found on the university’s website: http://www.uoc.edu). It can be considered as a representative university where the whole teaching and learning process is in an online platform. The educational activity is based on the development of several continuous assessment assignments (such as collaborative or individual essays, study cases, problem-based learning or discussions). Within the course which is the object of study, collaborative learning case-study techniques are frequently used. The content is based around the study of three real-life cases, which describe innovative projects applying information and communication technology resources within education.

The study takes place during the second assignment of the course, specifically during the evaluation of the results of the assignment, which consists of writing a critical essay on the in-depth study of a case over a period of two weeks.

The same course was analysed three times consecutively. In all three cases the same design was kept and the same teacher coordinated the activities. The students taking part in these courses were all university graduates of different professions, and most of them were practising professionals, mainly in the education and business sectors (see Table 1). In all the groups the gender composition was well balanced.

In order to perform the assignment, groups were formed on the basis of common background. This is an important premise for promoting discussion and to facilitate collaborative writing. For this reason, the groups were made up according to the students’ own preference for one of the case studies proposed. Their preferences were justified according to the relationship between the student and the case in terms of their experience, knowledge, personal and/or professional interests. The groups had their own work space within the debate area in the virtual classroom to carry out their critical discussions; they received the same instructions from the teacher, and were assigned the same amount of time to develop the activities.

Keeping the same work structure, co-evaluation was performed at the end of the assignment, with the support of an annotation tool. This was an online application used for the collaborative processing of texts, where anchored discussion has been found to produce to-the-point feedback in a highly task-oriented learning environment. This annotation system, developed by Van der Pol, Admiraal, and Simons (2006), displays both the document and discussion on screen, and allows teachers to anchor their comments to specific sections of the document, presenting a regular forum discussion, by means of which students respond to the teacher’s feedback.

<table>
<thead>
<tr>
<th>Courses</th>
<th>Participants</th>
<th>Groups</th>
<th>Messages</th>
<th>Episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>22</td>
<td>4</td>
<td>114</td>
<td>41</td>
</tr>
<tr>
<td>B</td>
<td>34</td>
<td>6</td>
<td>231</td>
<td>64</td>
</tr>
<tr>
<td>C</td>
<td>27</td>
<td>6</td>
<td>223</td>
<td>72</td>
</tr>
<tr>
<td>Totals</td>
<td>83</td>
<td>16</td>
<td>568</td>
<td>177</td>
</tr>
</tbody>
</table>

Note: An episode is made up by the teacher’s intervention and the student response to the feedback received.
In addition, the educational objective of this type of evaluation allows the students to present a second version of the work being evaluated, presumably improved as a result of the feedback. Therefore, in this study we also analysed the changes made to the second version of the work under review, with the objective of assessing the change and/or improvement of the arguments of the revised assignment.

In order to collect information different techniques were combined so that the data could be contrasted from different sources. First, we started with an in-depth interview with the teacher, focusing on the activity design. At the same time, and prior to the beginning of the learning assignment, an online survey was administered to the students to find out about their previous experiences with collaborative learning, particularly in relation to writing tasks. Specifically, they were asked about the strategies utilised to regulate their interventions during learning tasks requiring collaboration for the joint construction of knowledge in virtual environments. These results help us to understand and contextualise the focus of this research. We then performed a systematic observation of the evaluation activity taking place in the courses.

**Data analysis**

The exploratory analysis required by this research involved a laborious prior process of definition and validation of categories, which in our case was performed by resorting to the inter-judges procedure. The unit of analysis was defined as an episode, corresponding to a fragment of joint activity (segment of interactivity) which shows a certain participation structure and maintains a discursive unity. The episode was made up of the teacher’s intervention and the student response to the feedback received.

To explore the data, we firstly performed a descriptive analysis of the feedback, paying attention to two dimensions: their nature and their function. Second, and also in a descriptive manner, we analysed the student response to feedback, taking into account how they respond to teacher feedback in their interactions (forum), given that it is a cooperative evaluation exercise. Third, in a more detailed analysis, we assessed the repercussions that both the teacher feedback and the student response had in improving the text being revised. We then explored the presumed relationship between feedback, student response and the changes made to the revised texts. At the end of the process, we contrasted the results obtained with the expectations and experiences of both the students and the teacher, reflected in the answers to our questionnaires and interviews respectively. Table 2 summarises the procedure followed.

To analyse the nature of feedback, we adopted the categories created by Van der Pol et al. (2008): (a) feedback on content, in terms of relevance of the information, clarity of the problem, argumentation, explanation of concepts; (b) feedback on the

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exploration of the students’ expectations regarding feedback</td>
</tr>
<tr>
<td>2</td>
<td>Analysis of the teacher’s feedback</td>
</tr>
<tr>
<td>3</td>
<td>Analysis of the student responses to the feedback</td>
</tr>
<tr>
<td>4</td>
<td>Analysis of the differences between the two versions of the text submitted by the students as a result of their work</td>
</tr>
<tr>
<td>5</td>
<td>Exploration of the possible effects of feedback</td>
</tr>
</tbody>
</table>
structure of the text and on the relations between the different parts of the text (the problem and research questions, etc.) and (c) feedback on style: language, grammar, style rules, etc. (see Table 3).

In order to analyse the functions of feedback, as theoretical references we chose the categories created by Wolsey (2008). During our analysis, new categories came about and thus we adapted the referential categories. These categories went through a process of adjustment, definition, redefinition, combination, exclusion or precision until achieving the present uniform system consisting of seven categories. They are:

- clarification: elucidation of ideas, reformulations, completing an idea in relation to the content;
- affirmation/negation: stating whether something is true or not;
- argumentation: includes well-argued reflections, personal opinions or observations regarding the content in a well-argued manner, justifications, explanations;
- personal opinions: ideas or interpretations on the content, linked to their own personal experiences;
- correction: comments regarding the rules to follow, the assignment requirements, the content;
- question: request for explanation, clarification;
- suggestion: advice on how to proceed or progress, invitation to explore, expand or improve the work.

Table 3 contains some examples illustrating how feedback manifests itself in the teacher’s written discourse under analysis and what reaction it provokes among the students.

Inter-judge reliability

To establish the reliability of the coding system, one of the groups was selected at random and evaluated by four external judges (researchers/teachers in a virtual university). One of the judges was the teacher of the course and was familiar with the content.

The judges received training in the coding system, in relation to definitions, feedback nature and feedback functions. This helped to explore in depth a whole sequence of evaluation, with the messages by the teacher and the students contained in each episode, also taking into account the interactions between them and the effect it had on the improvement of the collaborative writing assignment, which was the object of evaluation. Each of the judges categorised independently, taking into account that each post had to be coded either into one category or, in special cases, into a combination of two categories (question – suggestion; correction – suggestion).

In this process, each coding discrepancy was solved through discussion, ideas were exchanged on the least precise categories, some definitions were improved and others were complemented with more examples. The judges concurred on the final codification of 72 episodes, representing a 91% agreement.

To evaluate the quality of the texts, we used the categories proposed by Reznitskaya et al. (2008), which were produced to assess the quality of jointly-constructed arguments. In essence, attention is paid to how ideas are supported with the relevant arguments, highlighting four modalities: (a) textual: ideas are extracted more or less literally from previous readings, (b) hypothetical: statements referring to
probable actions, (c) abstract: generalisations on causes and/or consequences of certain behaviours and (d) contextualising: statements that reframe the situation by considering the context, audience, etc.

With these criteria in mind, the teacher checked the students’ assignments, and later repeated this analysis with the second version of the assignment, taking into account that the evaluation was performed so as to offer an opportunity to improve the text (formative assessment). In order to analyse the changes made to the text, a tool from Microsoft Office Word was used. This software compares versions of the same document and identifies where differences can be found.

Results

Students’ expectations regarding feedback to improve an assignment

In the initial survey, the students revealed that, in this sort of assignment in a virtual learning environment, they usually resort to regulation strategies that enable them to agree on planning the work they need to do, as well as trying to go online frequently to look at their classmates’ opinions and record what everyone is doing at the time, and reviewing in detail the requirements of the activity they need to perform. They

<table>
<thead>
<tr>
<th>Nature</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>It’s worth reviewing the documentation we have on the case, with the intention of justifying this statement on the presumed interactivity of the pedagogical model.</td>
</tr>
<tr>
<td>Structure</td>
<td>Before presenting the analysis results, it’s a good idea to explain the structure or the reasoning behind it, the object of analysis, etc. This could serve as a good guide to the reader.</td>
</tr>
<tr>
<td>Style</td>
<td>In order to avoid redundancy in the paragraph, I think we should change ‘Today’ to ‘In this paper’.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affirmation/ Negation</td>
<td>This could be the most questionable issue in the project description we have been given, if we take into account that we are dealing with the development of a professional who needs to develop communicative competencies.</td>
</tr>
<tr>
<td>Argumentation</td>
<td>If you still think this is an achievement worth highlighting, then in the analysis we need to provide evidence and arguments backing it up. I think we only found general statements in this respect. The next paragraph, in the conclusions, expands on the issue but still says ‘we can infer’ … that is, it doesn’t prove that it was done, or rather, that it was done well.</td>
</tr>
<tr>
<td>Correction</td>
<td>The reference is cited word by word, so we must add the page number where the quote appears. This conclusion contains a statement that is not backed up by the analysis we performed.</td>
</tr>
<tr>
<td>Personal opinion</td>
<td>I don’t think it is evidenced at all, and technology itself will not guarantee it.</td>
</tr>
<tr>
<td>Question</td>
<td>What evidences enable us to state that the work groups were an efficient method for the training? What competencies did the teachers acquire?</td>
</tr>
<tr>
<td>Suggestion</td>
<td>For this statement to work as a valorative criterion, it is worth adding examples. This is too general; you don’t know exactly what it means.</td>
</tr>
</tbody>
</table>
also acknowledged they need to perform diverse roles, proposing work schedules and sending motivational messages, minding not to put anyone under pressure. Other strategies had to do with making different proposals to elicit a reaction from other classmates, consciously taking on board the proposals put forward for inclusion in the written text, supporting their work peers, clearly recording which things they agree with and which they do not, and proposing alternatives when they believe they will aid the development of the assignment.

In terms of what teaching strategies the students consider helpful in online writing assignments, there are various aspects to note. They considered it was essential to receive instructions with clear guidelines and criteria, regarding both the assignment and the use of collaborative tools, in a brief, clear and concrete manner. In terms of follow-up, the students highly regarded issues such as support, social reinforcements and suggestions whenever they were deemed necessary, gentle but firm communication and teacher feedback focusing on the actions and the process. This information revealed the need to regulate student participation strategically during the development of assignments in this type of environment.

**Teacher feedback and student response**

In terms of the nature of teacher feedback, the majority of the posts (69%) refer to the learning content. Regarding the functions of feedback, suggestions and corrections prevail. The rest of the categories appear with significantly lower frequency; thus we have decided to group them when presenting the results (see Table 4).

In general, students responded positively to teacher feedback. That is to say, they made good use of teacher feedback and performed some actions to improve the text under revision. For example, they created messages of clarification to justify or defend an idea in case of disagreement with the feedback message, or alternatively, they elaborated on or completed those arguments highlighted by the teacher as unclear.

In turn, as expected of any co-assessment task, the students’ response to teacher feedback presented itself as collaborative work. The forum shows the frequent exchange between the students themselves, and between them and the teacher. In most cases, they discussed among themselves and put forward suggestions to improve the text (see Table 5).

<table>
<thead>
<tr>
<th>Table 4. Descriptive statistics of teacher feedback.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td><strong>Nature of feedback</strong></td>
</tr>
<tr>
<td>Content</td>
</tr>
<tr>
<td>Structure and Style</td>
</tr>
<tr>
<td><strong>Function of feedback</strong></td>
</tr>
<tr>
<td>Clarification/Affirmation/Negation/Opinion</td>
</tr>
<tr>
<td>Argumentation</td>
</tr>
<tr>
<td>Correction</td>
</tr>
<tr>
<td>Question</td>
</tr>
<tr>
<td>Suggestion</td>
</tr>
<tr>
<td>Correction and/or Question plus Suggestion</td>
</tr>
</tbody>
</table>

Note: Frequency refers to the number of teacher feedback fragments coded.
These results highlight the importance of the group context in promoting discussion and the joint construction of meaning, which is further encouraged by the collaborative format of the assessment being performed in this activity, just as Dochy, Segers, and Sluijsmans (1999) and Topping (1998) have demonstrated in their research.

The impact of feedback in improving the text

The analysis of the modifications to the text shows that students alter their arguments after feedback. However, the results obtained show differences regarding the decisions made by the students to improve the text, which serve to corroborate the results found in the research we used as a reference (Reznitskaya et al. 2008). In terms of changes to content, in general we observed that, as a result of the evaluation, the text modifications range in type, but the improvement of arguments prevails: interpreting content (hypothesising), making abstractions, generalisations and/or contextualising ideas being processed. However, it is interesting to note that 23% of the changes only involved adding textual information, which did not lead to the expected improvement in arguments in the text being analysed (see Table 6).

These results highlight the need to perform a further, more detailed, analysis exploring the possible relations between the different issues analysed in terms of teacher feedback.

Table 5. Descriptive statistics and examples of student response.

<table>
<thead>
<tr>
<th>Student response</th>
<th>Example</th>
<th>Frequency (n = 168)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No response</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>Confirmation</td>
<td>Yes, teacher, clearly it’s not enough to consider the technical nature of the platform … but it is important to think of the pedagogical implications of a virtual environment and how it facilitates learning, how the information is treated and the interactivity among the agents, and between them and knowledge.</td>
<td>30</td>
<td>18</td>
</tr>
<tr>
<td>Comment, clarification</td>
<td>The texts were taken from the reference document that we have been reviewing, p. 5 and 9.</td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>Suggestions for changes</td>
<td>If we include the comment on teacher strategic planning regarding virtual competence, then we would have elaborated on the idea.</td>
<td>34</td>
<td>20</td>
</tr>
<tr>
<td>Discussion of changes</td>
<td>Indeed, the case description does not really explain how ICT facilitates … Maybe this is something that could be considered as … (Student 1) This section introduces the idea, not to comment on … but to … It seems so given that it is presented as a project about an education innovation, and all that is involved with the transformation and changes of paradigms in education. (Student 2) I believe that in the reference text we can find information that really enables us to infer what is said in the paragraph … and is the following … Therefore, this will justify the conclusion in the paragraph. (Student 3)</td>
<td>55</td>
<td>33</td>
</tr>
</tbody>
</table>

Note: Frequency refers to the number of teacher feedback fragments coded.
The results obtained in our research show a significant relationship between student response and modifications to the text \((r=0.341, \ p \leq 0.01)\). This means that students’ assimilation of feedback impacts on the changes they effect on the texts.

However, if we analyse the relationship between teacher feedback (its function and nature) and the changes made to the text, the relationship between these two variables is not statistically significant. This lack of correspondence can be explained by the design of the assignment, which was planned as co-evaluation, and so teacher feedback was meant to provoke student responses to her comments with a view to revising their work. It was thus hoped that any changes to the revised text the students had the chance to make were also performed as a result of collaborative work. That is to say, before making any changes prompted by the teacher revision, the students were expected to make exchanges so as to agree on the modifications they deemed relevant in the revision of the text.

With the objective of analysing how students benefit from feedback, a qualitative analysis of the statistical results was performed. This detailed analysis offers us some interesting clues in relation to the objective of this study.

In terms of teacher feedback, it was evidenced that when the teacher made corrections, the majority of the student responses were geared towards confirming and/or commenting on the post. In this data set, the students’ posts discussing the changes are significantly scarce. The same happens when the feedback appears as a teacher’s comment, simple affirmation or personal opinion. However, when the feedback acts as a suggestion, there is a rise in the number of constructive responses by the students; in their posts they elaborate on possible changes and, to a greater extent than with a correction, they also discuss the proposals.

In our opinion, the most relevant responses were produced when the teacher message combined and associated her suggestions to a question, or even to a correction. Faced with this modality of feedback, students not only produced a greater number of suggestions, they also discussed the changes being proposed to greater lengths (see Table 7).

On the other hand, focusing on the quality of the student responses to teacher feedback, and taking into account the possible effect it has on text modification, we observed that the most significant changes were effectively linked to the discussion of suggestions. Only 7% of the episodes of student discussion resulted in changes not related to the improvement of arguments (adding information) and there were no cases where the discussion referred to formal changes (see Table 8).

**Table 6. Summary of the changes made to the text.**

<table>
<thead>
<tr>
<th>Change of style</th>
<th>Frequency ((n=72))</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>Adding information</td>
<td>39</td>
<td>23</td>
</tr>
<tr>
<td>Interpreting the idea</td>
<td>53</td>
<td>32</td>
</tr>
<tr>
<td>Abstractions</td>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>Contextualizing the idea</td>
<td>13</td>
<td>8</td>
</tr>
</tbody>
</table>

*Note: Frequency refers to the number of changes effected on the revised texts.*

**Relationship between feedback and other variables**

The results obtained in our research show a significant relationship between student response and modifications to the text \((r=0.341, \ p \leq 0.01)\). This means that students’ assimilation of feedback impacts on the changes they effect on the texts.

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In terms of teacher feedback, it was evidenced that when the teacher made corrections, the majority of the student responses were geared towards confirming and/or commenting on the post. In this data set, the students’ posts discussing the changes are significantly scarce. The same happens when the feedback appears as a teacher’s comment, simple affirmation or personal opinion. However, when the feedback acts as a suggestion, there is a rise in the number of constructive responses by the students; in their posts they elaborate on possible changes and, to a greater extent than with a correction, they also discuss the proposals.

In our opinion, the most relevant responses were produced when the teacher message combined and associated her suggestions to a question, or even to a correction. Faced with this modality of feedback, students not only produced a greater number of suggestions, they also discussed the changes being proposed to greater lengths (see Table 7).

On the other hand, focusing on the quality of the student responses to teacher feedback, and taking into account the possible effect it has on text modification, we observed that the most significant changes were effectively linked to the discussion of suggestions. Only 7% of the episodes of student discussion resulted in changes not related to the improvement of arguments (adding information) and there were no cases where the discussion referred to formal changes (see Table 8).
This result corroborates the initial presumption in relation to the value of the group context for the joint construction of meaning, in this case argumentation. Through their exchanges, and especially through discussion, the students manage to improve their argumentative schema, re-elaborate the information and produce new ideas. Indeed, knowledge resulting from group discussion during collaborative assignments is essentially dialogical and reveals social influences during the development of reasoning.

**Discussion and conclusions**

This study focuses on the process of collaborative writing in asynchronous written communication environments. To be precise, our focus of attention has been to describe the characteristics of teacher feedback and explore the effects of feedback on text revision.

First, in relation to the expectations students had on the collaborative writing strategies in a virtual environment, our study corroborated they were met. The students expected to encourage response and reaction from their classmates to facilitate collaboration, and the results confirmed these strategies did take place. It is very likely that the design of the co-evaluation activity itself promoted collaboration and the discussion of ideas among the students. The students’ expectations regarding the help
required from the teacher were also met, because whilst it is true they demanded that the teacher give them guidelines with clear criteria (corrections) and suggestions, the actual feedback given by the teacher combined both aspects.

Taking into account the general characteristics of feedback, our results evidence that, in the revision of a collaborative writing assignment, essay-like and of an argumentative nature, the focus lies on the content more than in the formal aspects of the text. This is likely to be the result of two factors, the design of the assignment itself, with an emphasis on its formative function, with the objective of promoting student participation in the assessment, which encourages reflection and discussion of the different fragments of the text selected by the teacher.

In this sense, when analysing the specific characteristics of feedback, the prevalence of feedback based on corrections and suggestions is evident. According to the literature (Kulhavy and Stock 1989), feedback meets the two conditions necessary to facilitate the learning process, namely correction and elaboration, which in our study is represented by the suggestions which allowed the students to progress in the assignment and improve the text they were revising. In the light of these exploratory results, we can therefore state that, in collaborative writing assignments in an online environment, the teacher offers both corrective and elaborative feedback.

However, going beyond these results, and in relation to the second focus of attention, it is worth pointing out that the different modalities adopted by feedback have visible consequences with regard to the regulation of learning. To be precise, in the case we are analysing, a proactive reaction by the students was produced in response to feedback. This happened when they received messages questioning their work, but also suggesting changes in addition to the correction.

Nevertheless, when the feedback message was only corrective or simply expressed the teacher’s opinion, it did not seem to generate student responses other than confirmation. In this sense, the behaviour pattern which seems to generate quality changes (Reznitskaya et al. 2008) in collaborative text revision processes is initiated by teacher elaboration feedback, which generates discussion among the students and, as a result, leads to contextualised changes to the text. Proposing demands which require discussion among the students turns out to be an essential strategy to encourage a high quality revision of the texts, written collaboratively in an online learning environment.

This study has highlighted the importance of student participation in the assessment process. In writing collaborative tasks, the feedback design as an interactive and communicative process promotes student involvement in the learning process. As a result, through the evaluation, they can improve their competences for writing together. Nevertheless, this design makes sense if the students are made aware beforehand that they will have an effective chance to submit a revised version of their text based on the feedback discussion. In other words, the evaluation is considered as an opportunity for learning, with a focus on their formative function.

In conclusion, the results obtained in this exploratory study confirm the initial theoretical presumptions in relation to the definition of feedback. That is to say, it includes an elaboration component which offers the students information beyond their mistakes and/or correct answers. It is a modality of feedback that includes guidelines on how to improve the assignment at hand.

These conclusions confirm the findings from previous research into the matter, especially that carried out by Van der Pol et al. (2008), although in their study they referred to the nature of feedback in the evaluation of a collaborative writing assignment designed as peer review. On this basis, and taking into account the conclusions...
drawn from this study, it seems appropriate to encourage research with a wider range and higher number of samples, which will lead to validation of the hypothesis derived from this exploratory study.

Finally, whilst our research allowed us to corroborate the conceptual presuppositions taken as a starting point, their application requires further research which would allow observations in other collaborative assignments, with the participation of other teachers and other students. Likewise, it would be worthwhile to take into account teachers’ opinions about our proposal.

Despite this limitation, we believe that our results are useful in guiding teachers in virtual learning environments whilst performing evaluation (Guasch, Alvarez, and Espasa 2010), specifically in collaborative writing assignments. Above all, this would help reduce the efforts involved in evaluation, avoid unnecessary focus on correction, without actually eliminating this function, given that it is the main way a student has of checking whether their answer is correct or not. It seems more convenient to put more effort into the creation of presumably more productive messages, since they elicit proactive and constructive responses from the students. In this sense, it is worthwhile streamlining teacher training or producing guides to inform teachers about how to best perform evaluation in collaborative writing assignments in virtual learning environments.

Lastly, we believe that directing evaluation towards a process that supports teaching and learning may also prove motivational and become a source of satisfaction, both for teachers and students, who feel compelled to participate actively in educational processes with a common interest. In order to achieve this, it seems necessary to involve the students, commit oneself and them, little by little, by means of participation that is both constructive and conducive to learning.

We believe that introducing virtual educational environments into higher education can greatly reinforce this integrated vision of authentic teaching, learning and evaluation, and, therefore, that this idea should be kept as one of its main theoretical bases. In addition, there is a clear need for teachers and students to possess sufficient and efficient technology supports for teaching and learning in these environments. We are referring to specific technology tools required to carry out evaluation of learning, which promotes educational interaction with the teacher and communication among the students, thus making it possible to overcome the difficulties posed by any collaborative writing assignment in virtual environments.

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