



Self-Assessment and Pre-Service Teachers' Self-Regulated Learning in a School Organisation Course in Hybrid Learning

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ABSTRACT

The lack of autonomy of university students is a current problem in higher education, being considered a skill that students must acquire. To meet the objectives of higher education, students, especially those enrolled in bachelor's degree programmes, must be assisted in achieving a greater capacity for self-regulation, for which teachers must find an effective balance between guidance and self-regulated learning. We worked with 39 undergraduate students of the Bachelor's Degree in Early Childhood Education programme at the University of Salamanca (Spain) who were enrolled in a subject about school organisation, in the context of a hybrid learning mode due to the COVID-19 crisis. The pre-service teachers measured their progress weekly and self-assessed their performance in implementing the subject group work using a digitised rating scale through a questionnaire. The results showed that the students who best self-regulated their learning were more realistic in their self-assessment of their work, although they were not the highest achievers in some cases in terms of the final assessment of the assignment. In addition, the students valued the experience as positive, noting particularly that using the digital questionnaire to reflect on the quality of their work had helped them to improve the final assignment. Based on the results, teachers in the university where the study was implemented are considering continuing this practice and even applying it to other subjects, such as the Final Degree Project, where students have a more autonomous role in their learning and where good self-regulation can have very positive results.

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1. SELF-REGULATED LEARNING IN HIGHER EDUCATION

In recent years, one of the most common complaints of university teachers regarding university students is students' lack of autonomy. Students seem to increasingly require more guidelines for assignments. They ask questions like "How many pages must it have?" or "How do I do it? Do I write first a summary and then my opinion, or do I mix it up?". In that sense, we could think that traditional educational methodologies, in which the teacher is the axis of the teaching-learning process, set such precise guidelines during the course of study that students arrive at the university with a lack of competence in learning autonomously.

This problem became evident in Spain in March 2020 when the first coronavirus disease 2019 (COVID-19) state of emergency (known as *estado de alarma* in Spanish for "state of alarm") was declared to contain the spread of the disease. From that day until June 2020, teaching at all levels shifted from face-to-face to completely online. Given this situation, not only did the need for greater digital competence on the part of the educational community, including teachers and students, come to light (Díaz-Arce & Loyola-Illescas 2021), but the overwhelming number of emails received by the teachers also revealed the students' dependency.

This dependency of students must be seen as a deficiency in the preparation of young people in higher education. The ability to learn autonomously, with initiative and an entrepreneurial spirit, is considered a systemic skill that students must acquire, according to the *Tuning Educational Structures in Europe Project* (González & Wagenaar 2003). The project also mentions instrumental skills (such as problem-solving and decision-making) and interpersonal skills (such as critical and self-critical capacities) as systemic skills (González & Wagenaar 2003). All of these skills are essential for the successful employment of university students. They are even more essential in teacher training, given that the labour practice for which pre-service teachers are being prepared is characterised by negotiated practice and the social construction of teaching environments. In fact, we find these competencies again in the section dedicated to Early Childhood Education teachers in the Spanish White Book of the Degree in Teaching programmes [National Agency for Quality Assessment and Accreditation of Spain (ANECA) 2004]. This Spanish White Book differentiates between systematic competencies (such as autonomous learning or adaptation to new situations) and instrumental competencies (such as the capacity for organisation and planning or problem-solving). Both competencies are closely linked to the competencies of learning to learn and self-regulation of learning, which are understood as the ability of students to autonomously approach a learning situation (Hadwin 2013).

In this respect, the fundamental problem lies in the difficulty of finding a balance between the guidance of teachers and the margin for self-regulated learning for students. Several studies have been carried out to find the formula for this equilibrium, among others, Tchounikine (2019) and Wise and Schwarz (2017), who analysed the learners' agency in Computer-Supported Collaborative Learning environments (CSCL) and agreed in identifying the need to provide different support strategies to learners so that they could make informed choices, but without preventing them from being free to choose for themselves.

2. SELF-ASSESSMENT AS A TECHNIQUE FOR ENHANCING SELF-REGULATION

It is the teacher's task to propose an educational methodology that allows the student to self-regulate in the teaching-learning process, preventing them from feeling lost, but without setting too strict guidelines. Multiple techniques have been used for this purpose (in some cases, with technologies): flexible learning itineraries (Salinas-Ibáñez & De-Benito 2020; Salinas-Ibáñez et al. 2022), project-based learning (Costa & García 2017), use of virtual platforms (Díaz et al. 2017), personal learning environments (Llorente 2013; Tur, Ramírez-Mera & Marín 2022), the student's diary (Jurado 2011) and, in the most recent versions of the student's diary, the e-portfolio (Blaschke & Marín 2020) and the video diary (Pérez-Pueyo et al. 2017).

In this article, we focus on self-assessment through digitised rating scales, as a way to improve learners' ability to self-regulate their work. Also, we take into consideration the formative assessment. This type of assessment and its function in the teaching-learning process is not limited to the extraction of a final mark that measures the achievement of the proposed

objectives; rather, it is a formative approach to assessment. It also has a positive impact on the process itself due to the continuous and constructive feedback, which allows students to learn from both their successes and their mistakes (Álvarez 2007). Thus, self-assessment allows students to be aware of the quality of their work so that they can implement improvement techniques in their subsequent projects (Walser 2009). In this kind of assessment, the students themselves reflect on their performance, which enhances students' ability to self-regulate and engage with their learning (Miller 2012).

In that sense, self-assessment is intended to address one of the main problems that students encounter in self-regulating their learning. Many are unaware of their deficiencies and tend to overestimate their performance. This is known as the Dunning-Kruger effect and is more common in lower-performing students (Siegesmund 2017). However, using rating scales that encourage students to reflect as a group on the progress of their work, it is possible to improve students' self-perception. Furthermore, self-assessment is even more important in training pre-service teachers, who will have to manage this process in their future work. Of course, for learners to be truly capable of self-regulating, they must have the possibility of choosing the tasks (Kostons, Van Gog & Paas 2012). In this case, the rating scale serves as a guide, in which indicators of the development phases or work status are proposed (Muñoz, Ion & Flores 2019) so that students can measure how they are managing their time, but it is not a prescriptive formula.

According to Calatayud (2018), the ability to self-assess is necessary for the development of educational practice, since teachers have to be able to analyse their structures, validate their effectiveness and improve as much as possible. This has already been addressed by Nulty (2011), who concluded that the use of self-assessment techniques during studies empowers students and leads them to continue using this assessment method in their professional practice.

It should be noted that many studies that analysed the usefulness of self-assessment based their analysis on the proximity of the grade given by the students themselves to that given by their teacher (Acedo & Ruiz-Cabestre 2011; Capellato et al. 2020). However, this type of research is limited to one aspect of self-assessment by students—the ability to assess objectively—but ignores other aspects such as the usefulness of self-reflecting on the practice and the improvement in one's self-concept by taking on the responsibility of performing an assessment.

Considering the above insights, the ultimate objective of this study was to support decision-making on the adoption of the innovative self-assessment technique to improve teaching practice, that is, the students' use of a digital follow-up questionnaire throughout their completion of a written assignment as a technique for enhancing self-regulated learning.

3. METHODOLOGY

As stated in the previous section, the ultimate objective of this study was to support decision-making on the adoption of the innovative self-assessment technique to improve teaching practice. To achieve this ultimate objective, the general aims of the study are:

- GA-1. To investigate students' use of the technique throughout their completion of a written assignment.
- GA-2. To see how students were progressing through the semester.

Specifically, we wanted:

- SO-1. To analyse the students' progress through the semester regarding each assessment criteria.
- SO-2. To see if the students who progressively self-regulated their completion of the written assignment performed better with the assignment.
- SO-3. To find out whether such students were more aware of their performance at the end of the assignment.
- SO-4. To discover the students' perception of the technique, particularly of the digital follow-up questionnaire with the rubric and the rating scales.

This study was based on the experience of the Teaching Innovation Project "Monitoring collaborative learning of education undergraduate students in group work through digital

follow-up diaries with rubrics". The project was approved at the University of Salamanca (Spain) in the context of the university's Call for Grant Proposals for Teaching Innovation and Improvement Projects for the 2020–2021 academic year under its Office of the Vice-Chancellor for Teaching and Educational Innovation (code no. ID2020/129). Thus, this study was framed as a descriptive-type evaluative research (Fox 1981) that seeks to inform decision-making for improvement of the practice (Pérez 2004).

Considering the above framework, two instruments were used to collect data. The first instrument, which we called the *digital follow-up questionnaire*, was made up of three groups of questions for weekly work monitoring. In the first group of questions, the students monitored weekly their progress in each specific part of the written assignment through a rating scale with Likert-scale-type response options (i.e., "Not at all", "A little", "To some extent", "Rather much" and "Very much"). In the second group of questions, the students self-assessed weekly their progress in the assignment based on the nine criteria in the assessment rubric, using nine items with the assessment possible scores as the response options (0, 2.5, 5, 7.5 and 10 points). Finally, there was an open space for the students to describe any difficulty they experienced in completing the assignment. This questionnaire was answered in digital format on the subject's Moodle platform.

In this article, we focus on the second group of questions—the students' self-assessment of their progress in the assignment based on the rubric and their progress in self-regulation. The nine assessment criteria for the assignment were as follows:

- (1) Introduction: There is a general exposition of the topic as well as general and specific objectives with a clear order;
- (2) Organisation and content: The content is structured, presenting ideas in a clear order and in-depth;
- (3) Conclusion: There is a clear summary of the written assignment and indications as to whether the research objectives set at the beginning of the assignment were met;
- (4) Reflections throughout the manuscript and at the end of the manuscript: Reflections are presented throughout the sections and include a final reflection with a justification based on referenced sources;
- (5) Quality of the information: Information related to the topic is shown, as are examples and secondary ideas;
- (6) Figures and tables: Figures and tables are included with the adequate format and contribute to the understanding of the text;
- (7) References: Varied, up-to-date, reliable and well-cited references are included;
- (8) Format: The assignment is presented in a good layout following the formal criteria; and
- (9) Writing: There are no spelling or grammatical errors.

This self-assessment approach was analysed in the light of the need to find the necessary balance between guidance and self-regulated learning, considering that the items in the digital follow-up questionnaire set out the parts and formal characteristics of the assignment (considering the rubric), but the development of the assignment, the order, and depth with which to approach it were decisions that were left to the students.

The second instrument used in this study was a final evaluation questionnaire for the subject with a five-item Likert scale that allowed us to identify each student's perception of the digital follow-up questionnaire for the written assignment. The students were asked to indicate the degree of their agreement to various statements made regarding the digital follow-up questionnaire by checking one of the following response options: "Totally disagree", "Disagree", "Indifferent", "Agree" and "Totally agree". The scale presented a Cronbach's alpha of 0.81 and showed the following statements (translated from Spanish):

- The follow-up questionnaire has made me pay attention to the assessment rubric for the written assignment and its indicators.
- The follow-up questionnaire has made me look at the aspects that we could improve in the written assignment.
- The follow-up questionnaire has been useful for us in reflecting on our completion of the written assignment.
- The follow-up questionnaire has allowed me to improve my final written assignment.
- I am satisfied with the follow-up questionnaire for my final written assignment.

Thirty-nine students in the Bachelor's Degree in Early Childhood Education programme of the University of Salamanca (Spain) who were enrolled in the subject "School organisation" in the 2020–2021 academic year participated in this study. This subject is a basic training subject with six ECTS credits (European Credit Transfer and Accumulation System) in the second semester of the first year of the programme. It should be noted that 38 of the students were women (97.4%) and only one student was a man (2.6%), which is common for this degree in the current context and in the university. The 39 students formed 10 groups that tackled the written assignment and monitored their progress weekly using the digital follow-up questionnaire. It should be noted that only 30 of these students answered the final evaluation questionnaire.

Regarding the procedure for the implementation of this study, first, it is important to mention that due to the COVID-19 crisis during the 2020–2021 academic year, the class sessions were developed in hybrid mode, using video conferencing software and cameras installed in the classroom at the faculty. This means that each week, half of the students attended the sessions in face-to-face mode while the rest followed the session online via videoconferencing, interchanging their roles each week. In addition, students who tested positive for COVID-19 had to remain in lock down and follow the session online. This arrangement prevented the teacher from monitoring weekly the completion of the written assignment face-to-face, which led us to propose digital monitoring with our students, since the technology was available to all of them. This study was carried out from the fourth week of the subject, once Unit 3, "The institutional objectives and their documents" had been explained, in which one of the topics considered what an "educational project" is (i.e., one of the management documents for schools). The written assignment was to compare two current educational projects of two educational centres, and it was given as a group assignment. Each week during the execution of the assignment, the students were required to answer the digital follow-up questionnaire to inform the teacher of their progress. The questionnaire had to be answered on the first class of the week on the Moodle platform. There was a total of six weekly follow-ups. Subsequently, the teacher assessed the assignment submissions based on the same assessment criteria of the assessment rubric. Likewise, on the last day of classes the students answered, also on Moodle, the evaluation questionnaire about the subject, in which there was a section on this technique of self-regulation of learning.

The statistical analyses were conducted, and their results were plotted in figures, using the statistical software IBM SPSS Statistics 22 (IBM Corporation, Armonk, New York, USA) and Microsoft Excel software in the Microsoft 365 package (Microsoft, Redmond, Washington, USA), which allowed a descriptive analysis to be conducted.

4. RESULTS

For the presentation of the results, we separate the different sets of results into different subsections to relate them to the objectives. In that sense, we analyse what happened in the groups for each of the assessment criteria, which allows us to focus on their behaviour and thus, draw conclusions that lead us to answer the objectives.

4.1. STUDENTS' PROGRESS REGARDING EACH ASSESSMENT CRITERIA

Regarding the "Introduction" criterion (Figure 1), five groups (Groups 2, 3, 5, 6 and 10) started early but slowly with this part of the assignment and progressed over the weeks in elaborating it. On the other hand, three groups (Groups 1, 8 and 9) started tackling this part only in the fifth week; and one group (Group 4), only in the last week. As for Group 7, its self-assessment for four weeks was zero points (first, second, fourth and fifth follow-up), although in the intermediate follow-up (third week), they self-assessed with 2.5 points, which to us meant that although they had begun the introduction in a certain way in the third week, in the following week, they considered that what they had written did not satisfy the criterion. Regarding the teacher's assessment, we observed that in 60% of the groups, the teacher's assessment coincided with the self-assessment of the students, among them Groups 5 and 10, which were among the groups that had progressed little by little.

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	0	0	0	0	7.5	10	7.5
Group 2	0	5	7.5	5	10	10	10
Group 3	0	5	5	5	10	7.5	7.5
Group 4	0	0	0	0	0	5	10
Group 5	0	2.5	5	2.5	2.5	10	10
Group 6	0	0	2.5	5	7.5	5	7.5
Group 7	0	0	2.5	0	0	10	7.5
Group 8	0	0	0	0	10	10	10
Group 9	0	0	0	0	5	7.5	7.5
Group 10	0	7.5	5	10	10	10	10

Figure 1 Students' self-assessments in the weekly follow-ups, and final teacher's assessments for the criterion "Introduction". Note: Colours are incorporated to facilitate the visualisation of the progression from red for the lowest score (0) to green for the highest score (10).

As regards the "Organisation and content" criterion (Figure 2), 70% of the groups improved little by little throughout the follow-ups—60% of the groups after the second and third follow-ups (Groups 1, 2, 5, 6, 7 and 10) and 10% after the first follow-up (Group 3). Groups 4, 8 and 9 began to assess their progress in subsequent follow-ups, in the case of Groups 8 and 9, from the fifth week. As for Group 4, its self-assessment for four weeks was zero points (first, second, third, and fifth follow-up), although in the intermediate follow-up (fourth week), they self-assessed with 2.5 points. The teacher's assessment coincided with the last self-assessment of 60% of the groups, among which were Groups 5 and 10, which had progressed little by little. For the rest of the groups, there was a variation between the teachers' and the groups' scores, with the teacher's score lower in most cases, including in the case of Group 8, which did not progress steadily.

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	0	0	10	10	10	10	10
Group 2	0	5	5	10	7.5	10	7.5
Group 3	5	2.5	5	2.5	7.5	7.5	10
Group 4	0	0	0	2.5	0	10	10
Group 5	0	0	2.5	5	7.5	10	10
Group 6	0	2.5	2.5	7.5	7.5	10	7.5
Group 7	0	0	2.5	5	10	10	10
Group 8	0	0	0	0	10	10	7.5
Group 9	0	0	0	0	2.5	7.5	7.5
Group 10	0	5	7.5	10	10	10	10

Figure 2 Students' self-assessments in the weekly follow-ups, and final teacher's assessments for the criterion "Organisation and content".

For the "Conclusion" criterion (Figure 3), only two groups progressed little by little in their scores (Groups 6 and 10) starting from the third week. It should be noted, though, that Group 6 re-assessed itself in the last week with zero points, which, according to the group's self-assessment, was because they did not incorporate a Conclusion in their written assignment. We can take this to mean that this group had to rework their Conclusion in the last week. On the other hand, seven groups (Groups 1, 2, 3, 4, 5, 7 and 8) gave themselves a score for this criterion in the last week, and Group 9 did not give itself a score at all in any of the weeks. This may mean that this part of the assignment was one of the last aspects that most of the groups elaborated and that they did so close to the deadline. Only in 10% of the groups (Group 10) was the self-assessment score in the last week the same as the teacher's assessment, which was the highest score. In 40% of the groups, the teacher had given a higher mark than their self-assessment, and in 50% of the groups (among them, Group 8), the teacher had given a lower score.

As regards the "Personal reflection throughout the assignment and the final reflection" criterion (Figure 4), Group 10 again began to progress ahead of the rest of the groups, that is, in the third week. In the fourth week, another five groups began to assess their progress (Groups 1, 2, 3, 5 and 6) with different assessments, but not with 10 points, unlike Group 10. Groups

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	0	0	0	0	0	10	7.5
Group 2	0	0	0	0	0	10	7.5
Group 3	0	0	0	0	0	2.5	0
Group 4	0	0	0	0	0	5	10
Group 5	0	0	0	0	0	7.5	10
Group 6	0	0	2.5	2.5	5	0	7.5
Group 7	0	0	0	0	0	10	7.5
Group 8	0	0	0	0	0	7.5	5
Group 9	0	0	0	0	0	0	2.5
Group 10	0	0	5	10	10	10	10

Figure 3 Students' self-assessments in the weekly follow-ups, and final teacher's assessments for the criterion "Conclusion".

7 and 8 began to progress in the fifth week, while Groups 4 and 9 did not give themselves a score until the last week, close to the deadline. This leads us to consider that the reflection, which should have been done little by little throughout the period of the assignment, was sometimes elaborated only at the end to meet the assessment criteria and not at pace with the progressive composition of the assignment. Regarding the teacher's assessment, 50% of the groups had matching teacher and self-assessments, with high scores of 10 or 7.5, among which were again Groups 5 and 10. On the other hand, the other 50% of the groups differed in their scores, with 30% receiving a lower teacher score (among them, Group 8) and 20%, a higher teacher's score.

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	0	0	0	5	10	10	10
Group 2	0	0	0	7.5	5	10	7.5
Group 3	0	0	0	7.5	10	7.5	7.5
Group 4	0	0	0	0	0	10	7.5
Group 5	0	0	0	2.5	0	10	10
Group 6	0	0	0	2.5	5	2.5	5
Group 7	0	0	0	0	10	10	10
Group 8	0	0	0	0	2.5	10	7.5
Group 9	0	0	0	0	0	5	7.5
Group 10	0	0	7.5	10	10	10	10

Figure 4 Students' self-assessments in the weekly follow-ups, and final teacher's assessments for the criterion "Personal reflection throughout the assignment and the final reflection".

Regarding the "Quality of the information" criterion (Figure 5), Group 10 began indicating its progress in the development of the manuscript in this aspect from the second week, thus regulating the development of the assignment. In fact, this group self-assessed their manuscript for this criterion with five points in the second week, and then with the maximum score in the third week, as did their teacher. Two other groups (Groups 5 and 6) began to self-assess with a score also in the second week, whereas Groups 1 and 2 did so in the third week and Groups 3, 4 and 7, in the fourth week. However, it should be noted that Groups 8 and 9 began scoring themselves only in the fifth week. Half of the groups (including Groups 5, 6 and 10) had the same last self-assessment and final teacher's assessment scores, while 40% of the groups (including Groups 8 and 9) were scored lower by the teacher and 10% (Group 3) were scored higher.

For the "Figures and tables" criterion (Figure 6), Groups 6 and 10 were the first to begin to score themselves from the second week. In the third week, Group 5 also began to score itself. This means that these three groups were slowly making progress on this issue. On the other hand, three groups [Groups 4, 8 (again) and 9] did not score themselves until the last week, and Group 3 did not score itself at all. We take this to mean that most of the students created the figures or tables only to meet the assessment criteria at the end of the assignment period. Half

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	0	0	10	7.5	7.5	10	10
Group 2	0	0	7.5	10	7.5	10	7.5
Group 3	0	0	0	5	10	7.5	10
Group 4	0	0	0	2.5	2.5	10	7.5
Group 5	0	2.5	5	0	7.5	10	10
Group 6	0	2.5	5	7.5	7.5	7.5	7.5
Group 7	0	0	0	2.5	10	10	10
Group 8	0	0	0	0	10	10	7.5
Group 9	0	0	0	0	5	10	7.5
Group 10	0	5	10	10	10	10	10

Figure 5 Students' self-assessments in the weekly follow-ups, and final teacher's assessments for the criterion "Quality of information."

of the groups had the same self-assessment and teacher's assessment scores, although Group 5 was among them but not Groups 6 and 10. The remaining half of the groups were divided into 40% who had a lower teacher's score (including Groups 8 and 9) and 10% with a higher teacher's score.

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	0	0	0	0	10	10	10
Group 2	0	0	0	7.5	5	10	10
Group 3	0	0	0	0	0	0	7.5
Group 4	0	0	0	0	0	10	10
Group 5	0	0	2.5	5	2.5	10	10
Group 6	0	2.5	2.5	7.5	5	10	7.5
Group 7	0	0	0	2.5	10	10	10
Group 8	0	0	0	0	0	7.5	2.5
Group 9	0	0	0	0	0	5	2.5
Group 10	0	5	2.5	5	7.5	10	7.5

Figure 6 Students' self-assessments in the weekly follow-ups, and final teacher's assessments for the criterion "Figures and tables".

Regarding the "References" criterion (Figure 7), Groups 6 and 10 again progressively advanced, incorporating references gradually and elaborating them correctly little by little. In the third week, Groups 2 and 5 began to score themselves, and in the fourth week, Group 3. In subsequent follow-ups, however, all these groups returned to zero points. This could mean that these groups initially incorporated references but later eliminated them due to a perceived mismatch with the theme or due to a change in their manuscript.

There were groups that did not score themselves until the fifth week (Groups 7 and 9), or until a few days before the deadline (Groups 1, 4 and 8). This could mean that in most cases, bibliographical references were included only at the end of the period of the assignment, to meet the assessment criteria, and not—as in the case of the reflections—as an inherent part of the composition of the assignment. It is important to mention here the need to support the development of manuscripts, projects, essays and other assignments with references to studies of other authors from the start of the development, for better and deeper learning, and not to treat such references as merely additional elements that are included only to meet the final assessment criteria.

As for the teacher's assessment, again, half of the groups (including Groups 5 and 6 but not Group 10) had the same teacher's and last self-assessments. Of the remaining groups, 40% had a lower teacher's score (among them Group 8, which self-assessed with a 10 in the last follow-up but was assessed with a 2.5 by the teacher), and 10% of the groups had a higher teacher's score.

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	0	0	0	0	0	10	7.5
Group 2	0	0	2.5	0	0	5	7.5
Group 3	0	0	0	2.5	0	7.5	7.5
Group 4	0	0	0	0	0	10	2.5
Group 5	0	0	2.5	0	0	10	10
Group 6	0	2.5	2.5	5	7.5	5	5
Group 7	0	0	0	0	10	10	7.5
Group 8	0	0	0	0	0	10	2.5
Group 9	0	0	0	0	2.5	2.5	2.5
Group 10	0	2.5	5	7.5	7.5	10	7.5

Figure 7 Students' self-assessments in the weekly follow-ups, and final teacher's assessments for the criterion "References."

As regards the "Format" criterion (Figure 8), the first groups to score themselves—that is, in the second week—were again Groups 6 and 10, and in addition, Group 2. In the third week, Groups 1, 4 and 7 began scoring themselves, and in the fourth week, Group 3. In the fifth week, most of the groups scored themselves highly (including Group 8, which began to score itself only in this week but with a score of 10). In the last week, all the groups gave themselves the maximum score, except for Group 3. Half of the groups had the same scores—the maximum score—for the teacher's assessment and for their last assessment (again including Groups 5 and 10). As for the rest, 40% had a lower teacher's score (including Groups 8 and 9) and 10% (Group 3) had a higher teacher's score.

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	0	0	10	7.5	10	10	10
Group 2	0	2.5	2.5	10	10	10	10
Group 3	0	0	0	5	10	7.5	10
Group 4	0	0	2.5	2.5	2.5	10	7.5
Group 5	0	0	0	0	7.5	10	10
Group 6	0	2.5	0	5	7.5	10	7.5
Group 7	0	0	10	2.5	10	10	10
Group 8	0	0	0	0	10	10	7.5
Group 9	0	0	0	0	7.5	10	7.5
Group 10	0	2.5	10	10	10	10	10

Figure 8 Students' self-assessments in the weekly follow-ups, and final teacher's assessment in the criterion "Format".

Finally, for the "Writing" criterion (Figure 9), in the first week, many of the groups indicated that there were no grammatical or spelling errors in their assignment. This might have been because they had not yet written any part of it or they were progressively checking the grammar and spelling of what they were writing. In the second week, however, all the groups scored themselves with 0 to 2.5 points, the lowest scores, which means there were grammatical or spelling errors in their assignment. This could imply that their work was progressing, but they were not reviewing the spelling and grammar in detail. In all the remaining weeks, three groups (again, Groups 6 and 10, but also Group 4) scored themselves 10, which could reflect that according to their perception, there were no errors in their assignment. On the last week, eight of the groups gave themselves the maximum score and two groups (Groups 3 and 5) scored themselves 7.5, which suggests that they had been concerned with the grammatical and spelling errors in their documents.

However, looking at the teacher's assessments, only one group, Group 1, gave itself the same score in its last self-assessment, which was the highest score. Group 5 was scored higher by the teacher, and the rest of the groups (including Groups 8 and 9) had a lower teacher's score. As we can see for this criterion, the students' self-assessment of their manuscripts differed significantly from that of their teacher. This may suggest that students do not perceive some spelling errors as spelling errors, which could undermine their professional competence as teachers.

	First follow-up	Second follow-up	Third follow-up	Fourth follow-up	Fifth follow-up	Sixth follow-up	Teacher's assessment
Group 1	10	0	10	7.5	10	10	10
Group 2	10	2.5	7.5	7.5	7.5	10	7.5
Group 3	0	0	0	5	10	7.5	5
Group 4	10	0	10	10	10	10	7.5
Group 5	0	0	0	5	10	7.5	10
Group 6	10	2.5	10	10	10	10	5
Group 7	0	0	10	2.5	10	10	7.5
Group 8	10	0	0	0	10	10	5
Group 9	10	0	0	0	10	10	2.5
Group 10	10	2.5	10	10	10	10	7.5

Figure 9 Students' self-assessments in weekly follow-ups, and final teacher's assessments for the criterion "Writing".

4.2. STUDENTS' PERFORMANCE IN THE ASSIGNMENT

The total scores of the groups according to their weekly self-assessments and the teacher's final assessment are shown in Table 1 and Figure 10. As can be seen, in 90% of the groups, the difference between their last self-assessment and the teacher's final assessment was between zero and slightly more than one point, considering the formula for this as follows: teacher's final assessment minus group's last self-assessment. However, Group 8 had a difference of 3.33 points, the teacher's assessment being lower than the self-assessment. As noted earlier, Group 8 did not advance progressively from week to week, but on many occasions, began giving itself a score other than zero only on the fifth or sixth week. Finally, as can be seen in the final results, this group overrated itself for the different criteria and, consequently, in its final score.

Table 1 The total score of each group according to its self-assessment in each weekly follow-up, its final teacher's assessment, and the difference between the two assessments.

	GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5	GROUP 6	GROUP 7	GROUP 8	GROUP 9	GROUP 10
First follow-up	1.11	1.11	0.56	1.11	0	1.11	0	1.11	1.11	1.11
Second follow-up	0	1.67	0.83	0	0.56	1.67	0	0	0	3.33
Third follow-up	4.44	3.61	1.11	1.39	1.94	3.06	2.78	0	0	6.94
Fourth follow-up	4.17	6.39	3.61	1.94	2.22	5.83	1.67	0	0	9.17
Fifth follow-up	7.22	5.83	6.39	1.67	4.17	6.94	7.78	5.83	3.61	9.44
Sixth follow-up	10	9.44	6.11	8.89	9.44	6.67	10	9.44	6.39	10
Teacher's assessment	9.17	8.33	7.22	8.06	10	6.67	8.89	6.11	5.28	9.17
Differences	-0.83	-1.11	+1.11	-0.83	+0.56	0.00	-1.11	-3.33	-1.11	-0.83

Considering the results, of the groups of students who progressed little by little with the assignment, that is, who progressively self-regulated their development, not all achieved a high grade or better performance. In fact, Groups 5 and 10 obtained a high score but not Group 6, which had a final grade of 6.67, among the lowest. It must be noted, however, that the groups that did not advance progressively had worse results, such as Groups 8 and 9, which had the lowest grades.

4.3. STUDENTS' AWARENESS OF THEIR PERFORMANCE IN THE ASSIGNMENT

On the other hand, those groups that self-regulated progressively were more aware of their real performance at the end of the assignment since their last self-assessment differed less from their teacher's assessment. Group 6 even had the same score for its last self-assessment and its teacher's assessment.

4.4. STUDENTS' PERCEPTIONS OF THE DIGITAL FOLLOW-UP QUESTIONNAIRE

Finally, we present the students' perceptions of the digital follow-up questionnaire. Table 2 shows that the students had a positive perception of the questionnaire, as their score for it exceeded 4 points on average for all the statements, ranging from 4.13 to 4.46. Specifically, they

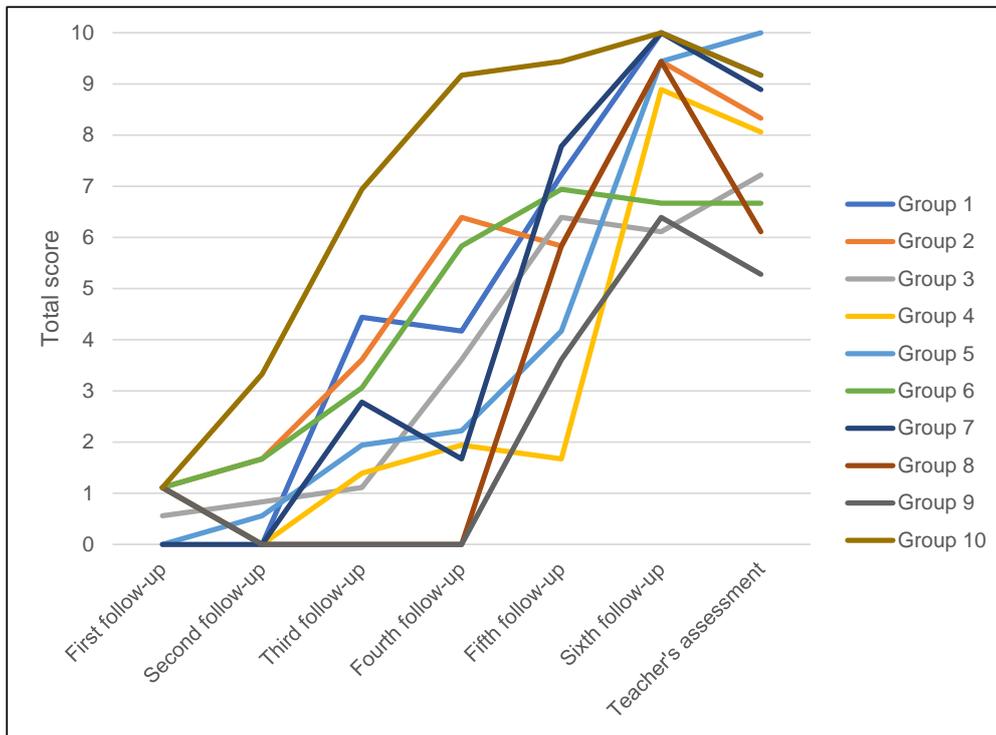


Figure 10 Graphical representation of the total scores of all the groups according to their self-assessments in each weekly follow-up and the final teacher's assessment.

indicated that the questionnaire allowed them to pay attention to the assessment rubric for the assignment and its indicators (item 1; MD = 4.47; SD = 0.57); to know the aspects that could be improved in the assignment (item 2; MD = 4.33; SD = 0.71); to reflect on the development of the assignment (item 3; MD = 4.33; SD = 0.84); and to improve the final assignment (item 4; MD = 4.13; SD = 0.77). Overall, they were satisfied with the instrument (item 5; MD = 4.20; SD = 0.66). Their responses indicate that they saw the questionnaire as having been useful to them.

	N	MIN.	MAX.	MEAN	STANDARD DEVIATION	ASYMMETRY		KURTOSIS	
						STAT.	STANDARD ERROR	STAT.	STANDARD ERROR
Item 1	30	3.00	5.00	4.47	0.57	-0.456	0.427	-0.748	0.833
Item 2	30	3.00	5.00	4.33	0.71	-0.594	0.427	-0.758	0.833
Item 3	30	2.00	5.00	4.33	0.84	-1.092	0.427	0.468	0.833
Item 4	30	3.00	5.00	4.13	0.78	-0.242	0.427	-1.261	0.833
Item 5	30	3.00	5.00	4.20	0.66	-0.242	0.427	-0.634	0.833

Table 2 Descriptive statistics of the items related to the students' perception of the digital follow-up questionnaire.

5. DISCUSSION AND CONCLUSIONS

The implementation of learning strategies that promote self-regulation have been seen to result in an increase in task motivation (Granados & Gallego 2016; Zimmerman 1995), better academic performance (Broadbent & Poon 2015; Lamas 2008; Muñoz-Cabana 2021), and an increase in the student's positive self-perception (Valle et al. 2010). In this study, some groups of students progressed little by little with the assignment regarding each assessment criteria, but some groups did so close to the deadline. However, in many cases, personal reflection and bibliographical references were elaborated only at the end to meet the assessment criteria and not at pace with the progressive composition of the assignment, which can prevent students from learning more deeply (SO-1). Furthermore, although we did not find a clear connection between the degree of students' self-regulation and their academic performance (SO-2), we detected, based on the students' evaluation of the experience, that their use of the self-assessment technique turned out to be rewarding and motivating for them (SO-4). On the other hand, a greater capacity for objectivity was detected in the self-assessment of the groups that were able to self-regulate more efficiently (SO-3), considering that those groups that progressed more regularly in the assignment were more realistic in their last self-assessment since this differed less from their teacher's assessment than in the case of students who did most of the assignment close to the deadline.

Although not all the students who self-regulated well performed excellently, we cannot ignore the fact that making them more aware of the quality of their performance is itself one of the objectives of education for undergraduate students (ANECA 2004; González & Wagenaar 2003). In addition, the students perceived the experience as positive, with more advantages than disadvantages, which contradicts some experiences reported by Kambourova, González-Agudelo & Grisales-Franco (2021) of students who perceived their self-assessment efforts as excessive or as outweighing the benefits of the technique. For this reason, the university teachers who participated in this study feel motivated to continue implementing the use of digital follow-up questionnaires as an improvement in teaching practice, to promote self-regulation of student learning and encourage a more objective self-assessment of their academic performance, and as a tool to balance teaching guidance with self-regulated learning. Furthermore, considering this digital version, follow-up questionnaires can be suitable for all students in any situation (either in institutionalised online, hybrid or blended learning settings, or, even, during students' temporary confinement). Thus, it is expected that the procedural learning achieved in this study can be transferred efficiently to other subjects in the short term, and to their future work as teachers in the medium and long terms.

Considering some recommendations for educational practice, we suggest those interested in implementing this strategy configure the digital follow-up questionnaire in such a way that the teacher receives an email notification, once the students have answered the questionnaire. Thus, the teacher can be aware of whether the students are doing the following-up, and can continuously monitor their progress. This can be configured using Learning Management Systems (e.g., Moodle) or Google Forms. Another recommendation is the inclusion of an open question about the difficulties that students experienced in completing the assignment. In some cases, students do not consult teachers directly about their doubts, either by email or in person, for different reasons (fear, lack of time, distrust...). Including this question would allow students to express their doubts without fear, so that they can get the help and guidance they need. Likewise, answers to the questionnaire should be recorded for the students' viewing. Thus, students can be aware of their progress and can self-regulate their learning.

Despite the above, this study had some limitations. First, we did not have a control group for comparison of the results, in which group the students would not have a weekly follow-up through the digital follow-up questionnaire and thus, would not be able to self-assess their progress. However, such a control group could give rise to the ethical dilemma of promoting an improvement in teaching practice in selected students instead of in all students. To avoid this dilemma, for the control group, another technique that promotes self-regulation of students could be implemented from those mentioned in previous studies as having been effective and useful for such a purpose, such as the use of the e-portfolio (Blaschke & Marín 2020) or flexible learning itineraries (Salinas-Ibáñez & De-Benito 2020). This alternative would seek to improve teaching practice in both groups but would allow comparison of their effectiveness.

Another limitation of this study is the timing of the answering of the evaluation questionnaire for the subject, which questionnaire included the students' perception of the digital follow-up questionnaire. As pointed out, this evaluation questionnaire was answered in the last class, that is, before the exam. Thus, although the students were assured before they answered the questionnaire that their responses would not affect their final grade for the subject as their teacher would not know the evaluation results until after the subject's completion, and that the evaluation was meant only to improve the subject in the future, the students' responses could have been influenced by social desirability bias.

Future research should consider the possibilities of student self-assessment through digital follow-up questionnaires in assignments in other subjects, or even in Final Degree Projects or Final Master's Projects, wherein the assignments would require great dedication on the part of the student and would extend for several months or even throughout an academic year. In addition, the development of these final projects is increasingly carried out in hybrid learning environments, with both face-to-face and online follow-ups, using different technologies (video conferencing software, instant-messaging services, learning management systems, email, questionnaires...). This last application could surface more findings that could enhance the self-regulated learning of higher education students besides supporting the teacher in the development of this final project in which the studies of pre-service teachers culminate. Moreover, it could be very useful to implement this strategy in online university degrees, for

which there may be more demand in the future because of the post-COVID19 situation. In this regard, the development of learning in virtual environments has been generalised, so future generations of university students may consider online higher education programs as an advantageous option.

In conclusion, from teachers' and students' perspectives, self-assessment can be a strategy that allows for a balance between guidance and self-regulated learning, either in online, hybrid or blended learning in higher education. Furthermore, digital follow-up questionnaires, such as the one presented, are useful for this purpose, especially in post-COVID19 settings, where studying online will be more common than ever. This kind of questionnaire reflects the teacher's perspective on the assessment criteria and the sections of the assignment to be developed. From the students' point of view, such questionnaires allow them to organize themselves freely in terms of the order, depth, and development of the assignment, reflecting on its completion in each follow-up. Thus, they can improve it, always with a view to the final aim of the assignment, but through different learning paths. Although post-COVID-19 scenarios may lead us to more digitalized and remote environments, students should not feel alone, but accompanied and guided, but also free, in a way that allows them to develop their autonomy.

DATA ACCESSIBILITY STATEMENT

The data used in the study are available upon request to the corresponding author.

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COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR CONTRIBUTIONS

Conceptualization, M.M.-d.-P., I.M.-S.; methodology, M.M.-d.-P.; formal analysis, M.M.-d.-P.; investigation, M.M.-d.-P., I.M.-S.; data interpretation, M.M.-d.-P., I.M.-S.; writing and original draft preparation, M.M.-d.-P., I.M.-S.; writing—review and editing, M.M.-d.-P., I.M.-S.

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