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**Attitudes and impact of peer review inside group work
in Spanish higher education: a case study**

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ABSTRACT

The present research paper intends to make a contribution investigating the topic of peer review in group work focusing on Spanish higher education students. The purpose of the study is to analyse the function of peer review in group dynamics. The research has been carried out during the optional subject “Teaching Methodology of EFL” in the English Studies degree at Universidad Complutense de Madrid. This subject took place during the second semester of the academic year 2019-2020, when the Covid-19 crisis was also happening. As a result of the preventive measures settled by the government, in-class teaching was suspended, and group work could not be done face to face. Therefore, that was taken into consideration when carrying out the research and included as a factor that affected group work and peer review. The study is empirical and follows a mixed method approach in which qualitative and quantitative data complement each other. There was a total of sixty-two participants (N=62), 48 female and 14 male. The data-gathering tool were three questionnaires which were distributed throughout the semester. Quantitative data is given by numerical questions in the form of Likert scales, while qualitative data was collected through open evaluative questions. In essence, the results of the research lead to the conclusion that, even if the dynamics are not completely reliable, peer review has a positive impact on group dynamics in the Spanish academic context. Promoting a peer review methodology encouraged students to improve their in-group communication and give feedback to each other, increasing this way students’ commitment towards the group and reducing social loafing.

Key words: peer review, group work, dynamics, questionnaires.

1. INTRODUCTION

Peer review dynamics has traditionally been employed in the teaching environment. It consists in engaging students to be involved in each other’s work and provide feedback of their peer’s work. It is considered a useful method in higher education because, as it will be explained in Section 2.1.1, it is a process where students have to both make an effort to provide feedback to their peers and accept and acknowledge the feedback that, in turn, is given to them. Moreover, one of the main advantages of peer review is that students are evaluated by their equals, which has a positive impact on their

learning process. However, its reliability and effectivity have been criticised due to the student's tendency towards dishonesty.

This kind of dynamics can be employed in a variety of situations and educational contexts. However, for the present research the focus will be on peer dynamics involving group work. Group work is another type of dynamic that has increased its popularity in higher education in the past decades. It is based on collaborative work to perform a specific task or achieve a goal. Group formation plays a key role in the performance of the tasks and, consequently, in the results of the assessments and in the effectiveness of peer review. In this project group formation was done following the theory and guidelines put forward by Smith et al. (2012) and Belbin (2010), as explained in Section 3.

The present research paper intends to make a contribution to this field by investigating the topic of peer review in group work focusing on Spanish higher education students. The purpose of the study is to analyse the function of peer review in group dynamics in this context and to find out the extent to which it is useful. The research has been carried out during one of the optional subjects of the English Studies degree in Universidad Complutense de Madrid. This subject took place during the second semester of the academic year 2019-2020, when the Covid-19 crisis was also happening. As a result of the measures settled by the government, in-class teaching was suspended, and group work could not be done face to face. Therefore, that was taken into consideration when carrying out the research and included as a factor that affected group work and peer review.

This study is, hence, an attempt to add information to the issue of peer review in the Spanish academic context. In order to focus the research and guide the investigation, the following research questions were formulated. The intention is for them to be addressed in the course of the investigation and examined in the subsequent:

1. What advantages and disadvantages does peer review have regarding group work?
 - a. To what extent does it contribute to group work?
 - b. To what extent does peer review reduce social loafing in group work?
 - c. To what extent is peer review reliable?
2. How has the suspension of classes and meetings due to the Covid-19 situation affected group work?

2. LITERATURE REVIEW

This section constitutes an overview of what has been studied regarding peer review and group work. The majority of the studies found on peer review aim to point out the factors that influence the dynamics and the advantages that it provides regarding the learning process. However, some studies shed light on some of the problems that this method might generate. These three points (influential factors, advantages and problems) are further analysed in subsection 2.1. Additionally, group work and group formation will be addressed in section 2.2, where Belbin's taxonomy of team roles is described.

2.1. Peer Review

A general definition of peer review is given by Nicol et al., who defines it as “an arrangement whereby students evaluate and make judgements about the work of their peers” (2014, p. 104). Therefore, students both produce and receive feedback reviews. Peer review should not be mistaken with peer assessment. Van Zundert et al. define peer assessment as “a process whereby students evaluate, or are evaluated by, their peers” (2010, p. 270). The difference between peer review and peer assessment is the transcendence of the evaluation. In peer review students are limited to provide feedback about their peers, not considering this as part of the subject evaluation process. On the contrary, in peer assessment dynamics, students do evaluate their peers' work and give a mark which influences their final grade. The study matter of this research project is peer review since the study does not aim to influence the grading system of the subject.

2.1.1. Advantages

The main reason why peer review is used is due to the advantages that it provides. It makes the learning process active for the student and increases the cooperation between classmates. On top of that, students assume responsibilities and are forced to transform knowledge in a way that can be assimilated by their partners (Goldschmid & Goldschmid, 1976). This, being guided in an appropriate learning environment, is highly beneficial for students' learning process.

In addition, Grobman (1999) defends the construction of meaning through social interaction as a better way to learn. If students are provided with the appropriate tools, they will be able to adequately judge their peers' work and provide a feedback review. At the same time, they will receive their own. This interaction with equals constitutes a

different stimulus from that of learning in isolation and is beneficial for students in higher levels of education. Sadler (2010, as cited in Nicol et al., 2014) argues that students will not entirely develop their skills and knowledge by only teaching them what should or should not be done or how to improve their work. Instead, that needs to be complemented with practical dynamics such as peer reviewing.

Moreover, Nicol et al. stress the importance of feedback production in the learning process. He explains that “producing reviews engages students in multiple and overlapping acts of evaluation or critical judgement, both about the work produced by other and, in many different ways, about their own work” (2014, p. 117). This means that it is through the process of evaluation and comparison that students are able to learn and reflect about their own work. This relates to Bloom’s taxonomy, where these processes of evaluation and comparison are described as high order thinking strategies, which provide deeper learning outcomes (Armstrong, 2011).

Finally, another advantage of peer review is its employability outside the educational context. This dynamics, as Cassidy (2006) argues, helps to develop skills that are useful beyond the learning environment. Students learn how to accurately assess work, which is a skill that will probably be beneficial for their future careers. The same happens as well with group work: by applying it in higher education it provides transferable skills that may be further used (Smith et al., 2012).

In conclusion, peer review dynamics includes a series of advantages that have been established by experts (Cassidy, 2006; Goldschmid & Goldschmid, 1976; Grobman, 1999; Nicol et al., 2014). These advantages such as cooperation, increase of responsibilities, self and other critical judgement, and employability enhance the use of peer review dynamics in higher education.

2.1.2. Problems

Even if peer review has been proven to have advantages, there are also some problems when carrying out this kind of dynamics. These problems generally relate to the extent of the dynamic’s effectiveness, the attitudes that students have towards the method, or the reliability of their performance.

According to Van Zundert et al. (2010), there is the problem of not being able to define or measure the extent of peer review’s effectiveness. He remarks that “it is

impossible to make claims about what exactly constitutes effective PA (peer assessment); in other words, which PA measures benefit student learning and yield satisfactory psychometric qualities such as reliability and validity” (2010, p. 270). This is due to the lack of research about effectiveness. Summarizing, there is a large amount of theorization on peer review dynamics but there is a need of research in the field regarding how to measure reliability and validity.

In addition, students’ attitudes towards this didactic method is an important issue to consider since it can be one of the main problems when putting it to practice. There are studies that suggest that students’ attitudes towards peer review are mainly positive and that they consider it a useful tool (Goldschmid & Goldschmid, 1976; Nicol et al., 2014; Williams 1992; Van Zundert et al., 2010). In contrast, Cassidy (2006) suggests that while students have a positive attitude receiving feedback from their peers, they tend to feel uncomfortable giving it to others due to the responsibility that it requires. Moreover, McCabe’s et al. (2001) study points out that the attitudes that students have towards these methods depend on the acceptance of the overall group. To my perception, there is a conflict regarding the attitude that students have towards peer review dynamics because, even if it seems to be positive following the above-mentioned studies, there is a possibility for these results to be unreliable.

Regarding the reliability of the student’s performance, Williams (1992) observes that students tend to inflate their peer’s marks. However, they are aware of the quality of their own production. It is a problem that needs to be tackled. Moreover, as Cassidy (2006) recalls, “there is also evidence which suggests that students often fail to fully understand or utilise assessment criteria, do not know what a good or bad piece of work looks like, are focused towards the awarded mark or grade and, as such, fail to read, understand or adequately process tutor’s feedback or act upon it” (2006, p. 510). In short, this means that the reliability of these dynamics may vary depending on the students’ maturity and the learning environment.

In conclusion, peer review dynamics has also been criticised and, while it seems to be a beneficial method, there are some problems that need to be addressed when using it or having it as a research matter.

2.1.3. Socio-psychological factors

There are other factors that have been found to have an influence on peer review. These factors, as described in Goldschmid and Goldschmid (1976), are mainly socio-psychological. They are conformed by a series of characteristics or situations that affect group dynamics in higher education.

On the one hand, Newcomb (1974, as cited in Goldschmid & Goldschmid, 1976) argues that one of the most influential factors for students is the reference group, namely the group they take as an example in terms of behaviour. Additionally, there is the presence of in-group loyalty and honour codes inside students' groups (McCabe et al., 2001). In their article, McCabe et al. (2001) state that peer review is a violation of in-group loyalty and that, consequently, it tends to be discouraged by students. As a solution, they propose that peer review should become a responsibility for students, for example by rewarding its implementation. Moreover, another social tendency that student follow also related to group work is social loafing (Jassawalla et al., 2009). It occurs when individuals inside a group make less effort to achieve the goal that they would do working alone. It results in unbalanced working. Taking all this into consideration, for the present research project socio-psychological factors that might affect the study were minimized the following way: group formation was done following Belbin's (2010) team role theory, a group contract was created and signed by each group at the beginning of the course, and there was a reward for answering the Peer Review and the Feedback Questionnaire.

On the other hand, authority plays a major role in peer review. Keating (2018) argues that peer review dynamics help to counterpart traditional hierarchical structures in the learning environment. Nevertheless, it is a delicate matter since students need to feel that the feedback provided and received is validated by a figure of authority for it to be useful. And, at the same time, the feeling of being evaluated by equals is seen as beneficial for the learning process.

In summary, the factors that influence peer review relate to the development and behaviour of students in society. It is important to take this into account when implementing this kind of dynamics in a higher education environment.

2.2. Group work

Group work consists in performing a task through collaborative work. As mentioned earlier, group formation plays a key role in the performance of the tasks and, consequently, in the results of the assessments and in the effectiveness of peer review. There are many possibilities for group formation, and the performance and results differ depending on which method is used. For example, groups can be arranged randomly, students can make their own groups, groups can be arranged by the teacher, or they can be formed using a specific method, which is the case for the present research.

The method chosen for this research follows Belbin's theory (2010) and is an adaptation of Smith's et al. study (2012). Smith et al. conclude that the performance of students improves when using Belbin's method. Belbin (2010) studied group behaviour and measured team members to establish a categorization that divides team members into nine different roles: Plant, Resource Investigator, Coordinator, Shaper, Monitor Evaluator, Teamworker, Implementer, Completer Finisher, and Specialist¹ (2010, p. 22). This way, when a group has different kinds of roles, individuals complement each other. As explained in the next section, for the present project there was a simplification of this categorization due to practical matters.

3. METHODOLOGY

The current study is empirical and follows a mixed method approach in which qualitative and quantitative data complement each other. Three questionnaires were distributed throughout the semester as the mechanism of data collection. Quantitative data is given by numerical questions in the form of Likert scales, while qualitative data was collected through open evaluative questions. In this section the methodology process and components will be further described, as well as the methodological approach.

¹ Belbin (2010) provides the following definition of the roles. **Plant:** Creative, imaginative, unorthodox. Solves difficult problems. **Resource investigator:** Extrovert, enthusiastic, communicative. Explores opportunities. Develops contacts. **Co-ordinator:** Mature, confident, a good chairperson. Clarifies goals, promotes decision-making, delegates well. **Shaper:** Challenging, dynamic, thrives on pressure. **Monitor Evaluator:** Sober, strategic, discerning. Sees all options. Judges accurately. **Teamworker:** Co-operative, mild, perceptive, diplomatic. Listens, builds, averts friction, calms the waters. **Implementer:** Disciplined, reliable, conservative, efficient. Turns ideas into practical actions. **Completer Finisher:** Painstaking, conscientious, anxious. Searches out errors and omissions. Delivers on time. **Specialist:** Single-minded, self-starting, dedicated. Provides knowledge and skills in rare supply.

3.1. Participants

For this research project there was a total of sixty-two participants (N=62), 48 female and 14 male. The participants were students enrolled in the subject “Metodología de la Enseñanza del Inglés” (Teaching Methodology of EFL), an elective subject of the English Studies degree at Universidad Complutense de Madrid. This subject was chosen for the following reasons: it allowed the flexibility needed to make the study possible, the educational plan included group work, peer review was seen as an interesting method to put to practice and investigate, and, finally, the participants were familiarized with the subject of the study. These factors were thought to facilitate the development of the research within this particular subject.

3.2. Data-gathering tools and data collection

The data-gathering tools of the study were three questionnaires. They were distributed to all the students in class on three different occasions during the semester, they were piloted beforehand by four students to assure comprehensibility and appropriateness. The first questionnaire (Appendix A) was distributed at the beginning of the semester. It was aimed to divide the students into different team roles and, following the results, conform the project groups with one individual of each role in each team. The other two questionnaires (Appendix B and Appendix C) were given in the middle and at the end of the semester, respectively. In these questionnaires, students were asked to evaluate their peers' and their own work.

To begin with, the Team Role Questionnaire (see Appendix A) is an adaptation from *Team Roles at Work* by Belbin (2010). The purpose of the questionnaire is to divide the students into five different team roles and, following the results, conform the project groups including one individual of each role in each team. As a result, groups were composed by members who did not know each other and complemented each other following Belbin's (2010) team role theory. The team roles selected are a simplification of Belbin's (2010) categorization, which were originally nine (see note 1). The five team roles used are the following: *Resource Investigator*, *Coordinator*, *Teamworker*, *Implementer*, and *Specialist*. They were found to be the five more basic components of a group conformed by students who, as a goal, had to create a lesson plan. Students were asked to fill the questionnaire by ordering the roles according to which they mostly identified themselves with. Thus, number one was the role they identified themselves

most with, and number five was the least representative for them. The questionnaire was handed out, explained, and collected during a class session in the second week of the semester. The groups were formed the following week and started working together in in-class practical sessions.

Secondly, in the Peer Review Questionnaire (see Appendix B) students were asked to first evaluate their work as a team with open questions and then evaluate their peers' performance with a Likert scale. The purpose of this questionnaire was to make students reflect on their performance and lead the students towards peer review dynamics within their respective groups. In-class activity and group meetings were suspended by the government measures concerning the Covid-19 crisis on March 11th 2020, before the middle of the semester. Therefore, the Peer Review Questionnaire was distributed as an online Google form, and the situation was taken into consideration as a possible factor that affected group work.

Last of all, the Feedback Questionnaire (see Appendix C) was aimed to gather information on the final performance of the groups and see whether peer review had been useful or not, as well as how online group work had worked. Additionally, the questionnaire included two questions regarding students' honesty when answering the different questionnaires. The form of the questionnaire is that of a Likert scale, where the statements were formulated in the first person, but it also contained a comments section where students were able to formulate their final impressions and thoughts. This questionnaire was distributed online as a Google form during the last week of the semester, when the group projects were finished.

The total of the corpus collected is divided into the three questionnaires. The Team Role Questionnaire was compulsory because group-making was an essential part for the development of the subject. It was answered by the sixty-two students enrolled in the class (N=62). As opposed to the previous one, the second and the third questionnaire were not compulsory but optional. In order to motivate students to fill the questionnaires there was a reward of 0.25 extra points in the final mark (the subject is graded out of ten). As a result, the Peer Review Questionnaire was filled by forty students (N=40), 36 female and 4 male; and the Feedback Questionnaire by forty-four students (N=44), 34 female and 10 male.

3.3. Methodological approach

The processes of data analysis are divided into qualitative and quantitative data. Quantitative data is, at the same time, divided into ordinal data from the Team Role Questionnaire and nominal data from the Likert scales in both the Peer Review and the Feedback Questionnaire. Furthermore, all quantitative data was analysed statistically. Qualitative data, on the other hand, consists of open-ended questions that were analysed thematically by describing categories and coding the data, following Braun and Clarke's theory (2006). This way, the analysis of quantitative and qualitative data is complementary to each other as they offer the possibility to compare and complete information given by the other in order to obtain extensive results.

The ordinal data gathered from the first questionnaire was analysed using Excel and ordered in groups prioritizing the student's first choice of the ranking. Due to the uneven results of the questionnaire (i.e. most students choosing as their first option roles *Teamworker* and *Co-ordinator* and few students choosing *Specialist*), it was impossible to arrange the groups by only using students' first answer. Therefore, second and third prioritized answers were also used in the process of group formation.

The quantitative data gathered from the Likert scales in both questionnaires is considered nominal data and was analysed through descriptive statistics also using Excel. In the case of the Peer Review Questionnaire, the analysis was done putting together the answers of all students for each question in the Likert scales. The results are represented in one graph that will be analysed in section 4.1.1. In contrast, the results of the Feedback Questionnaire are divided into six graphs due to the division of the questions thematically. This allows to simplify the analysis of the results, which will be developed in section 4.2.1.

The open-ended questions from both questionnaires generated qualitative data. For the analysis of this data, the method of "Thematic Analysis" (Clarke et al., 2015) was taken as an example. This methodology is based on the identification of patterns in the data. This serves to organize the information and leads to a solid analysis. Braun and Clarke (2006) describe a six-step guide to analyse the data in which it is firstly coded by the researcher looking for repetitive patterns to, consecutively, collate the codes into potential themes. These themes could be defined as the outcome of code combination, the results of analysing the data. In the present project the qualitative data was firstly divided

into categories and then coded by identifying the patterns in each category. Then, themes were defined as the results of the analysis of qualitative data. The results of the quantitative analysis will be developed in sections 4.1.2 and 4.2.2.

Finally, it is important to mention what variables have been taken into consideration in this study. As mentioned earlier, the purpose of this research is to analyse the function of peer review in group dynamics. Hence, the main independent variable is peer review dynamics and the dependent one is group work. Additionally, in consonance with the research questions, minor variables can be found such as social loafing (dependent), and the Covid-19 situation (independent). Moreover, for the present study gender is considered a moderator variable since it could not be controlled or neutralized due to the proportion of males and females in the subject (3-4 females per male).

4. RESULTS

The results of the questionnaires will be analysed in this section. As mentioned in the previous section, data is divided into quantitative and qualitative in each questionnaire. The results will first be shown separately and then put together in section 5 in order to draw conclusions and answer the research questions. The analysis will follow a chronological order, being first the Peer Review Questionnaire (4.1) and then the Feedback Questionnaire (4.2).

4.1. Peer Review Questionnaire

The Peer Review Questionnaire (Appendix B) was divided into two sections. The first one, named “General”, consisted of six open-ended questions regarding teamwork as a whole. The second section was composed by four Likert scales, one per peer. In this section students were asked to evaluate their peers through four statements. Then, they were asked to provide feedback with the question “What is one aspect that you think he/she could improve?”. The results of the Peer Review Questionnaire will be divided into quantitative data, for the Likert scales, and qualitative data for the open-ended questions.

4.1.1. Quantitative Data

The quantitative data gathered from the Peer Review Questionnaire (Appendix B) is taken from a Likert scale in which students had to evaluate their peer’s performance

from 1 to 5 through the following statements (1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = completely agree):

Q1: He/she is collaborating to meet all the objectives.

Q2: He/she is following the team contract.

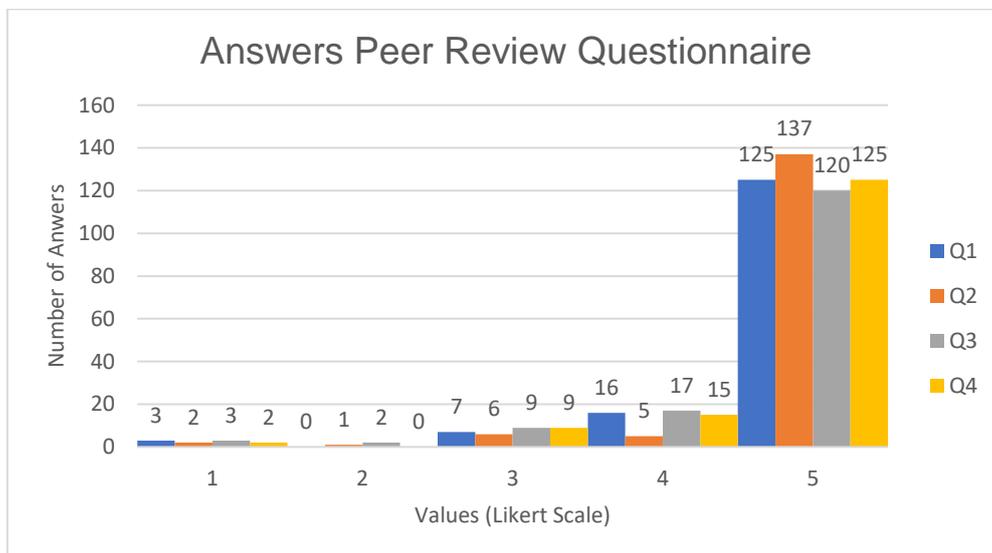
Q3: He/she has attended all the meetings.

Q4: You think that he/she is committed and contributing to the teamwork.

The results of this peer evaluation are represented in the following figure:

Figure 1

Answers to the Likert Scales in the Peer Review Questionnaire



As can be observed in Figure 1, most students gave a positive evaluation of their peers in the four statements. However, a slight drop can be noticed in Q3 “He/she has attended all the meetings”, which is the statement where there are fewer positive answers and the one with the highest number in the lower values. Consequently, this first questionnaire shows that the majority of the students were collaborating adequately but some of them were not committed enough in relation to group meetings. This could be due to the Covid-19 situation as will be further analysed.

4.1.2. Qualitative Data

The qualitative data gathered from the Peer Review Questionnaire is taken from the general section that deals with teamwork and consists of six open-ended questions

(Table 1) as well as the comments to a question added at the end of the Likert scales that asked for feedback on each individual (Table 2). The results will be analysed in categories and codes as explained in section 3.3.

Table 1

Analysis of the General Open-ended Questions in the Peer Review Questionnaire

Categories I	Categories II	Codes
Positive	Communication	Different opinions, agreement, flexibility, respect, participation, listening, discussion, understanding.
	Collaboration	Cooperation, problem solving, mutual help, willingness, availability.
	Organization	Schedule, determination, responsibility.
	Creativity	Ideas, imagination.
	Getting along	“Vibes”, kindness, motivation.
Negative	Discoordination	Timing, focus, hesitation, leadership.
	Disagreement	Critical judgment, stubbornness, indecision, lack of consensus.
	Miscommunication	Difficulties in understanding, commitment in meetings.
	Shyness	Not sharing, anxiety.
	Not knowing each other	Mistrust, shyness.

Table 1 contains the analysis from the answers to the first six questions, in which students had to reflect about their biggest strengths and weaknesses as a team, the communication inside the group, if the work was being done in a balanced way, how they could improve, and whether the Covid-19 situation had affected their performance in any way. As can be observed in the table, the comments were divided into two macro-categories: positive and negative comments. Within these two poles, there are other categories, followed by the coded analysis of the data.

Regarding the positive category, students focused on the following five sub-categories: *communication*, *collaboration*, *organization*, *creativity*, and *getting along*. These were the qualities that they considered to be their biggest strengths. The numerous codes belonging to the category of *collaboration* lead to the conclusion that many students thought that all members were contributing at the same level to the project. In addition,

cooperation, determination, imagination, and motivation are terms coded from student's answers that mirror student's positive attitude towards the group-work. In conclusion, the themes taken from the positive category are the following: working cohesion, communication and cooperation towards agreement, and determination, motivation, and creativity as the three basic ingredients to carry on with the project.

As for the negative aspects (*discoordination, disagreement, miscommunication, shyness* and *not knowing each other*), these correspond to what the students found to be their biggest weaknesses regarding teamwork. The main problem found is *discoordination*, which happens due to the different schedules of the participants. Apart from that, students also emphasized problems when understanding each other resulting from different factors such as disagreement, lack of commitment, shyness, mistrust, etc. The resulting themes of the negative category are that different students' schedules lead to discoordination and that shyness, mistrust, and disagreement cause a destabilization in the group's performance.

From my perspective, it is worth analysing further the question regarding the Covid-19 impact. The majority of the students agreed that it had had an impact on their performance. Certainly, most students found that the suspension of the classes had an impact on the communication of their group. As commented by one of the participants, "it will make everything more difficult because we cannot communicate properly without seeing each other". However, not all of them considered that impact as negative, there were some that took the situation as an advantage since they said that "everyone seems more committed". To sum up, even if for some students it had a motivating effect, the drastic change of the situation has contributed to the miscommunication problems in the groups.

Table 2 contains the analysis taken from the evaluative personalized feedback asked at the end of the Likert Scales. The question asked was "What is one aspect that you think he/she could improve?" Approximately two thirds of the students answered that they did not have any feedback to give with comments similar to "nothing remarkable". The third remaining is the one being analysed, where the majority of answers focused on the four categories aforementioned: *contribution, communication, flexibility, and shyness*. These are the four aspects that students thought their peers could improve. Looking at the results, it is seen that some students wanted their peers to participate and share more than they were already doing. Some of them also commented that they would like more

flexibility from their colleagues. Taking into consideration the results of the negative category in Table 1, we observe that they coincide with student's feedback of each other since the focus is on the same topics: communication, coordination, and contribution. Student's emphasis is on their peers to improve participation, creativity, and coordination. As well as being more flexible regarding other people's opinions. These are the themes resulting from the evaluative feedback data.

Table 2

Evaluative Feedback: Analysis of the Open-ended Questions in the Peer Review Questionnaire

Categories I	Categories II	Codes
Ideas	Contribution	Participation, being active, decision making, creativity, sharing ideas.
	Communication	Coordination, informing about progress.
Behaviour	Flexibility	Being more open-minded, give room for more options.
	Shyness	Shy to share and give ideas.

4.2. Feedback Questionnaire

The Feedback Questionnaire (Appendix C) shows mostly quantitative results since it consisted of a Likert scale. However, there was a comments section at the end of the questionnaire which will be analysed as qualitative data.

4.2.1. Quantitative Data

The quantitative data gathered from the Feedback Questionnaire is taken from a Likert scale in which students had to evaluate different aspects of their performance as a group. Therefore, in order to obtain clearer results, the questions were divided into six sections that will be analysed separately: *objectives*, *working cohesion*, *improvement*, *impact*, *honesty*, and *enjoyment*. Students were asked to evaluate from 1 to 5 (1 = completely disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = completely agree) the fourteen statements (see Appendix C).

The first section is composed by the two following statements regarding objectives, whose answers are presented in Figure 2:

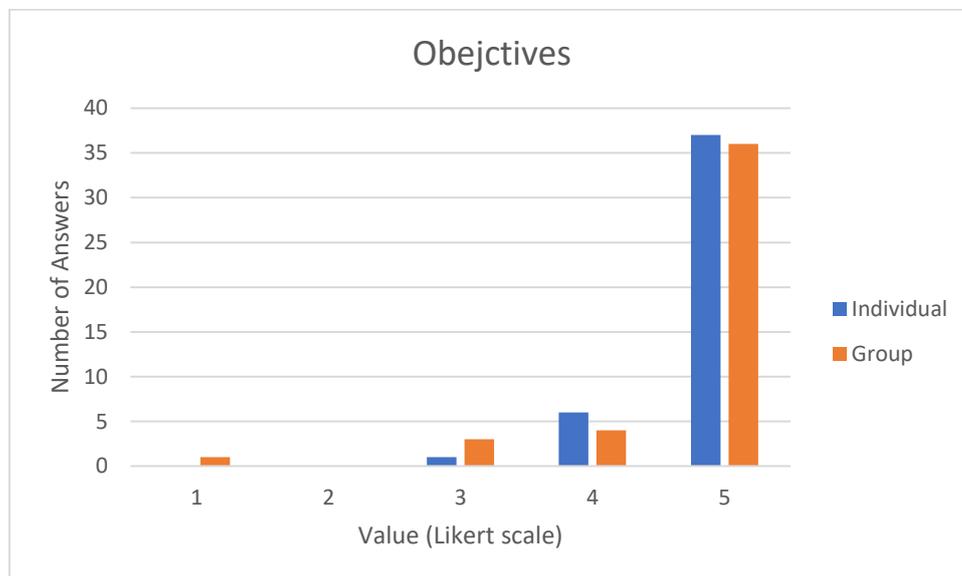
Q1: I have met the group objectives.

Q2: My group has met the group objectives.

These two statements were aimed to see how students related themselves and the group to the final result of the project. The answers show that the majority of the students feel that both their group and they themselves have met the objectives (Figure 2). Nevertheless, as can be observed, there is a tendency towards the statement “I have met the group objectives”, which has a higher number of answers in the higher values.

Figure 2

Objectives: Answers to the Likert Scales in the Feedback Questionnaire



The second category, Working Cohesion, is the largest one with a total number of six statements (see Figure 3). These statements serve to evaluate in general terms how the group had worked along the semester:

Q3: We have followed the team contract.

Q4: We used to attend to class practical sessions.

Q5: We have had online regular meetings.

Q6: We have all attended the meetings (mostly).

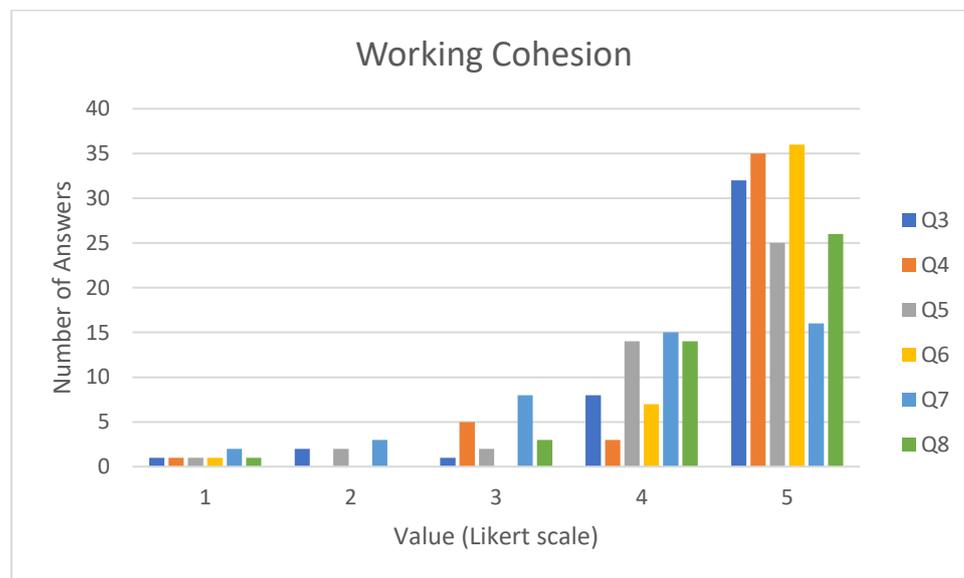
Q7: We have all contributed at the same level.

Q8: We have worked cohesively.

Looking at the answers of Q3, Q4, and Q6 we observe that students were committed to the group itself and mostly attended the meetings. However, at the same time, the results of Q7 and Q8 show that not all students had contributed at the same level to the project, even if they had worked cohesively as a team. Regarding online meetings (Q5), there is a drop in the answers if compared to regular meetings which took place in class practical sessions. This shows that students did not continue the meetings online with regularity after the suspension of the classes due to the Covid-19 situation. Going back to Table 1 results, it could be argued that the lack of continuity of the meetings also had an impact on the communication problems inside the groups.

Figure 3

Working Cohesion: Answers to the Likert Scales in the Feedback Questionnaire



In the Improvement section of the questionnaire (see Figure 4) it was asked whether students thought that they could have organised themselves better and obtained better results. The results are shown in Figure 4 and it is noticeable that while there are only eight answers in the higher values, there are twenty-six answers in the lower ones. Hence, students mostly thought that they had organized themselves the best way possible.

Figure 4

Improvement: Answers to the Likert Scales in the Feedback Questionnaire

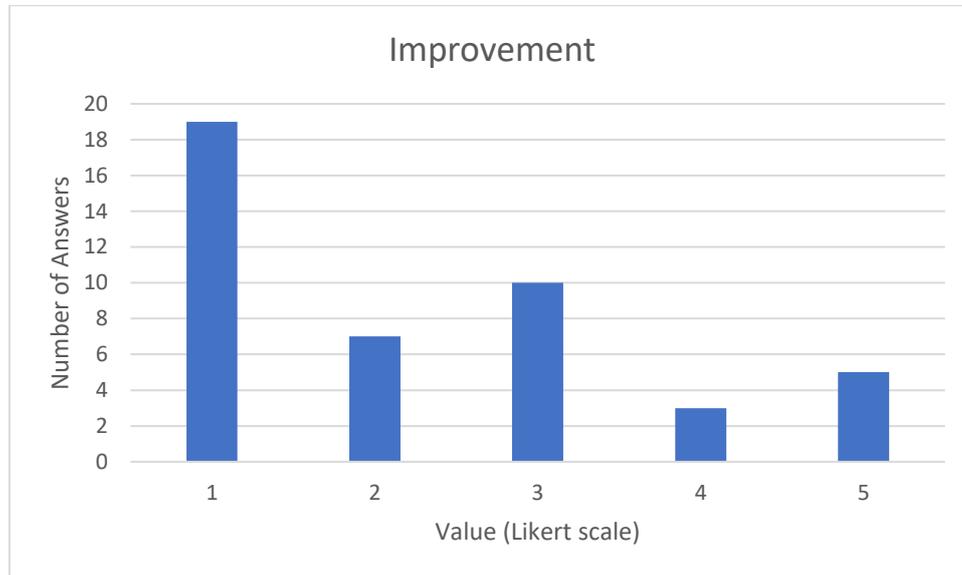
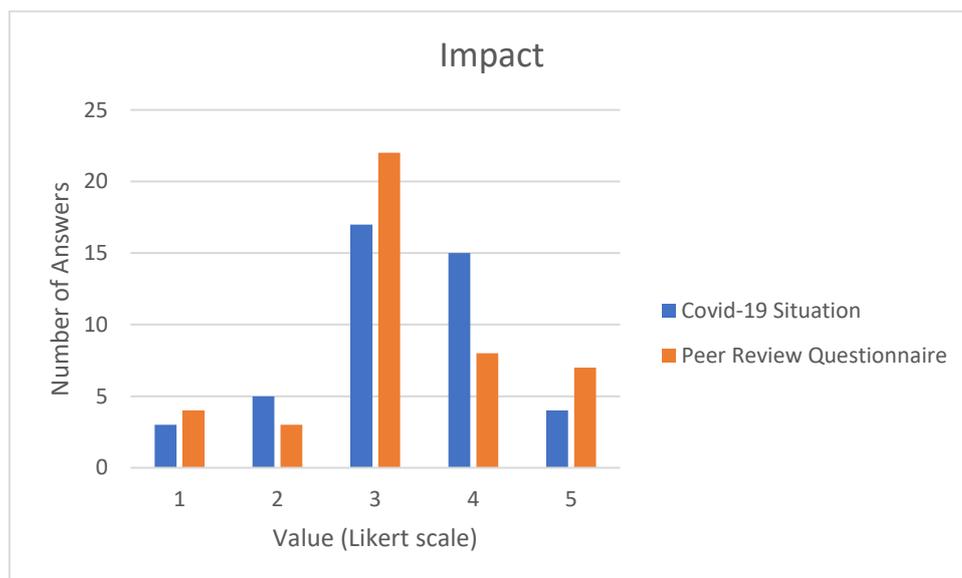


Figure 5 represents the category of Impact; it was aimed to measure the positive impact that the Covid-19 situation and the Peer Review Questionnaire had on teamwork and the overall results of the project.

Figure 5

Impact: Answers to the Likert Scales in the Feedback Questionnaire

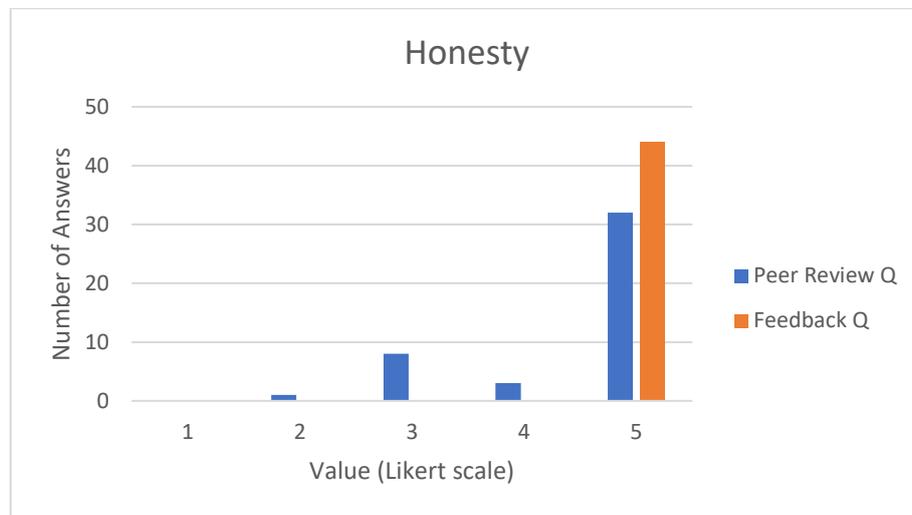
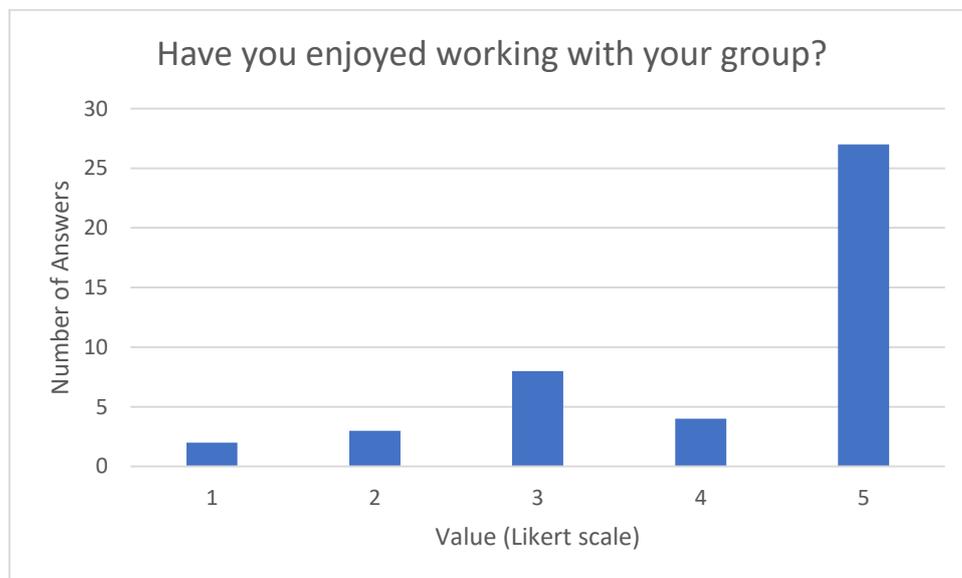


Regarding the Peer Review questionnaire, the results show that half the students felt neutral about it, one third thought that teamwork had improved after the submission of the Peer Review Questionnaire, and the remaining students thought the opposite. Consequently, I would argue that one third of the students did apply and follow the aim of the questionnaire, which was to reflect on their performance and lead students towards peer review dynamics within their respective groups.

As for the Covid-19 measures, almost half of the students answered that it had had a positive impact, one third answered neutral, and the remaining part did not think that the impact was positive. As explained in the methodology section, the Feedback Questionnaire was distributed at the end of the semester, while the Peer Review Questionnaire was submitted shortly after the suspension of the classes. Taking this into account and considering the results shown in Table 1, it could be said that the attitudes towards online working improved between the two questionnaires. In Table 1 most students commented on the negative impact that the Covid-19 situation had in the group's communication. In contrast, Figure 5 shows that the majority of the students either felt neutral about it or thought that teamwork had improved after the suspension of in-class activity due to the Covid-19 situation. This change in their attitude may be because of students' late but effective adaptation to the situation.

The fifth section was aimed to check if students had been honest while answering the two questionnaires and to make them reflect on how important it is to be honest when answering questionnaires or surveys. The results are shown in Figure 6, it is remarkable that some students (27%) admitted not having been honest in the Peer Review Questionnaire. Nevertheless, most of the students claimed that they had been completely honest in both the Peer Review (73%) and the Feedback Questionnaire (100%).

The sixth and last category was named "Enjoyment", the question asked was whether students had enjoyed working with their groups. The results (Figure 7) show that 11% of the students had not enjoyed working with their teams, 18% were neutral about it, and the remaining 71% did enjoy it. The results of this question are complemented by the qualitative analysis of the Feedback Questionnaire that follows.

Figure 6*Honesty: Answers to the Likert Scales in the Feedback Questionnaire***Figure 7***Enjoyment: Answers to the Likert Scales in the Feedback Questionnaire***4.2.2. Qualitative Data**

The qualitative data gathered from the Feedback Questionnaire is taken from the comments section, where students were asked for additional comments, either specific regarding one of the previous questions, or general dealing with teamwork along the

semester. The results are coded inside categories and will be presented in Table 3 following the method explained in section 3.3.

Table 3

Analysis of the Open-ended Question in the Feedback Questionnaire

Categories I	Categories II	Codes
Positive	Getting along	Lucky, wonderful, good experience, improvement, entertaining and fun.
	Results	Hardworking, organization, good mark, gratifying, success, happy, proud.
	Group making	Beneficial, fitting, meeting new people, resembles reality.
Negative	Group making	Chosen by students, rather known than unknown peers, uncomfortable.
	Covid-19 situation	Difficult to handle, online communication, disengagement.

The positive macro-category of Table 3 contains the students' positive comments regarding general group-work. The three main categories in which they presented their answers are *getting along* with their teammates, the *results* of the project, and the method of *group making*. Within these categories, the students described the experience in highly positive terms such as *wonderful*, *entertaining*, *gratifying*, or *successful*. They felt lucky and happy for having worked with their groups and conceptualized the group making method as beneficial. For example, one student said that:

“I just have to say that at the beginning I was sceptical about whether this group methodology was going to work because I didn't know any member of my team. However, the results were much better than I thought and I felt very comfortable working with my colleagues.”

This was the case of some students (63%) but not of all of them, as it will be analysed in the second macro-category. Overall, I would say that the themes resulting from these coded data are that students considered the group making method and the peer review dynamics as beneficial, they were satisfied and proud of their results, and they had a good experience working within their groups.

In regard to the negative comments, they are divided into two main sub-categories: *group making* method and *Covid-19 situation*. As mentioned before, not all students felt the same about the methodology of group arrangement, some of them would have preferred being in a group with people they knew because they found this arrangement uncomfortable. Apart from that, the negative aspects observed concern the difficulties resulting from the Covid-19 measures. As shown in Table 1, some students found difficulties in online communication or found that the participation of their classmates was insufficient. In summary, the resulting negative themes are that some students were not comfortable with the group making procedure and others felt the negative impact of the Covid-19 situation.

5. CONCLUSIONS

The present research paper aimed to add information in the fields of peer review dynamics and group work, focusing on the Spanish higher education environment. The purpose of the study was to analyse the relation between peer review and group work along with other factors that may have an influence in the process. As presented in section 1, there were two main research questions. On the one hand, the first research question (What advantages and disadvantages does peer review have regarding group work?) was focused on the primary research matter: peer review and group work; and was divided into three sub-questions: (1a) To what extent does it contribute to group work?; and (1b) To what extent does peer review reduce social loafing in group work?; (1c) To what extent is peer review reliable?. On the other hand, research question 2 dealt with the effects of the Covid-19 situation (How has the suspension of classes and meetings due to the Covid-19 situation affected group work?). In this section the research questions will be answered and the final conclusions of the project will be developed considering the results shown in section 4 and the previous studies reviewed in section 2.

The peer review dynamics applied in this research project were mainly given by the Peer Review Questionnaire. This questionnaire had as an objective for students to reflect on their self and peer performances relating group work and then, taking that as the starting point, communicate with their peers and give feedback on each other's work. This kind of interaction serves to increase cooperation between classmates and increases their critical judgment towards others and themselves (Nicol et al., 2014). In relation to group work, it was expected that peer review dynamics had a positive impact. Looking at the results of the Peer Review Questionnaire (Figure 1 and Table 2), I would argue that

approximately half of the students who answered the questionnaire actually made an effort to reflect and give feedback to their peers. Moreover, completing that information with the one obtained from the Feedback Questionnaire (specifically Figure 5), I would conclude that for one third of the students the peer review dynamics promoted by the first questionnaire were highly beneficial in relation to group work. The majority of the remaining students were neutral about it, some of them had not even answered the Peer Review Questionnaire. With respect to research question (1a), peer review does contribute to group work, it enhances students' communication and evaluation of each other. However, when peer review dynamics are not imposed but instead students have to make an effort to develop them, the extent of the benefits does not reach all groups but just some of them.

The factors that were described to significantly affect peer review and group work were mostly socio-psychological. In the case of this research project, the focus was on social loafing, which is the tendency of individuals inside a group to make less effort than they would do working by themselves. This is found to be one of the main problems of group work (Jassawalla et al., 2009). In the present research project we took several measures to prevent social loafing within the groups. First of all, the group-making methodology was created following Belbin's theory (2010) for individuals in the groups to complement each other. Then, a team contract was designed where students committed to their working methodology in each group. And finally, the peer review dynamics installed through the questionnaires were also aimed to avoid students' disengagement from the groups. Considering the results shown (see Figure 2, Figure 3, Figure 4, Figure 7, and Table 3), it can be said that the amount of social loafing spotted in the groups was rather low. There were some cases expressed in the final comments section (see Table 3), which, according to the responses, were caused by either the group making methodology or the Covid-19 crisis. In conclusion, as far as research question (1b) is concerned, I would conclude that peer review does contribute to reducing social loafing in group work to some extent, but for a significant reduction it needs to be combined with other strategies such as the ones mentioned earlier.

The reliability of peer review is one of the aspects commonly questioned (Williams, 1992; Cassidy, 2006). Research question (1c) corresponds to the reliability of peer review in this study. If we examine the results of the Feedback Questionnaire in Figure 6 we observe that some students admitted not having been honest in the Peer

Review Questionnaire, while all of them claimed to be completely honest in the Feedback Questionnaire. Thus, answering the research question, I would conclude that peer review is mostly reliable but not completely. Again, it is possible that the reliability increases when peer review dynamics are further implemented and followed by an instructor.

In summary, I would say that the main advantages of peer review in relation to group work is that these dynamics 1) enhance students to receive and give feedback towards the improvement of the group project, 2) contribute to build a solid communication and cohesion between teammates, and 3) elevate students' commitment towards the group reducing disengagement. The only disadvantage found is that, when peer review dynamics are promoted but not compulsory, it cannot be assured to be a completely reliable method. However, the advantages mentioned have a clear positive impact in the learning outcomes of students. Hence, they surpass the disadvantages found.

Regarding the impact that the Covid-19 measures had in relation to group work (research question 2), it is remarkable how students' perspective changed from the beginning of the situation to the end of the semester. In the Peer Review Questionnaire (see Figure 1 and Table 1) students were asked whether they thought that the suspension of in-class activity (that had taken place two weeks before) was affecting their performance as a group. Most of the students answered that it was affecting negatively causing communication problems, and just two students thought that it was affecting in a positive way, making their peers more committed. On the contrary, the results of the Feedback Questionnaire, which was distributed two months later, reflect a change in the pattern. Figure 5 shows that half of the students thought that teamwork had improved after the suspension of in-class activity due to the Covid-19 situation. Students' attitude towards the new situation changed positively throughout the semester, improving this way their overall performance.

The limitations of the present research also need to be considered. First, the results and conclusions are not to be generalized due to the small sample of participants and the restricted learning context in which the research was carried out. In addition, peer review dynamics were not explicitly implemented but only promoted to the students. This being the case, the results showed that the benefits were significant in some of the groups. Further studies could implement these mechanisms to have a broader understanding of the effects of peer review in group work. Last of all, this study did not consider individual differences of the students such as gender (moderator variable) or motivation, which

could have had an impact on the results. However, this research project fills a research gap by directly testing the relation between peer review and group work in this context, as well as considering the Covid-19 situation as an influential factor.

In essence, the results of the present research lead to the conclusion that, even if it is not completely reliable, peer review has a positive impact on group dynamics. Promoting a peer review methodology encouraged students to improve their in-group communication and give feedback to each other, increasing this way students' commitment towards the group and reducing social loafing. In addition, the Covid-19 situation was taken into account as a factor that could influence group work and, in the end, it was observed that students considered that it had had a positive impact. Overall, I would conclude that the group arranging methodology combined with the peer review dynamics result in cohesive students' performances.

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Appendix A

TEAM ROLE QUESTIONNAIRE

In the following questionnaire you will find different types of roles defined by Belbin (2010). Please read carefully, underline the characteristics that you associate yourself with, and order from 1 to 5 the roles in the boxes on the left. 1 being the one you identify yourself most with, and 5 the least one.

		Roles and descriptions (Team Role contribution)	Allowable weaknesses
		Resource investigator: Extrovert, enthusiastic, communicative. Explores opportunities. Develops contacts.	Overoptimistic. Loses interest once initial enthusiasm has passed.
		Co-ordinator: Mature, confident, a good chairperson. Clarifies goals, promotes decision-making, delegates well.	Can be seen as manipulative. Delegates personal work.
		Teamworker: Co-operative, mild, perceptive, diplomatic. Listens, builds, averts friction, calms the waters.	Indecisive in crunch situations. Can be easily influenced.
		Implementer: Disciplined, reliable, conservative, efficient. Turns ideas into practical actions.	Somewhat inflexible. Slow to respond to new possibilities.
		Specialist: Single-minded, self-starting, dedicated. Provides knowledge and skills in rare supply.	Contributes on only a narrow front. Dwells on technicalities. Overlooks the 'big picture'.

Appendix B

PEER REVIEW QUESTIONNAIRE

In the following questionnaire you will find general questions regarding your team performance. Afterwards, you will find member-specific questions which need to be answered following a graded scale (1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = completely agree). Please answer honestly.

General:

1. What do you think is your biggest strength as a team?
2. What do you think is your biggest weakness as a team?
3. How would you say your communication as a group is going?
4. Is everyone collaborating at the same level?
5. Do you think that the suspension of in-class activity due to the Covid-19 situation is in any way affecting your performance?
6. Is there anything you would like to add that you think would improve your performance?

Specific:

Team Member Name:	1	2	3	4	5
1. He/she is collaborating to meet all the objectives.					
2. He/she is following the team contract.					
3. He/she has attended all the meetings.					
4. You think that he/she is committed and contributing to the teamwork.					
5. What is one aspect that you think he/she could improve?					

Team Member Name:	1	2	3	4	5
1. He/she is collaborating to meet all the objectives.					
2. He/she is following the team contract.					
3. He/she has attended all the meetings.					
4. You think that he/she is committed and contributing to the teamwork.					

5. What is one aspect that you think he/she could improve?	
--	--

Team Member Name:	1	2	3	4	5
1. He/she is collaborating to meet all the objectives.					
2. He/she is following the team contract.					
3. He/she has attended all the meetings.					
4. You think that he/she is committed and contributing to the teamwork.					
5. What is one aspect that you think he/she could improve?					

Team Member Name:	1	2	3	4	5
6. He/she is collaborating to meet all the objectives.					
7. He/she is following the team contract.					
8. He/she has attended all the meetings.					
9. You think that he/she is committed and contributing to the teamwork.					
10. What is one aspect that you think he/she could improve?					

This questionnaire was aimed for you to reflect on your group performance and possible improvements. Don't hesitate to talk to your peers about what you think you can do better.

Appendix C

FEEDBACK QUESTIONNAIRE

In the following questionnaire you will find questions which need to be answered following a graded scale (1 = completely disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = completely agree). Please answer honestly.

Statements	1	2	3	4	5
1. I have met the group project objectives.					
2. My group has met the group objectives.					
3. We have followed the team contract.					
4. We used to attend class practical lessons.					
5. We have had regular online meetings.					
6. We have all attended the meetings (mostly).					
7. We have all contributed at the same level.					
8. We have worked cohesively.					
9. We could have organized better and obtained better results.					
10. Teamwork improved after the suspension of in-class activity due to the Covid-19 situation.					
11. Teamwork improved after the first questionnaire was submitted.					
12. I answered honestly to the mid-term questionnaire. In case you did not answer to that questionnaire mark option 3.					
13. I have answered honestly to this questionnaire.					
14. I have enjoyed working with my team.					

Please include here any additional comment you have regarding the questions above or, generally, your group work along the semester: