

Innovación e investigación educativa para la formación docente

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CAPÍTULO 61.

PROS AND CONS OF USING “BREAKOUT ROOMS” IN POSTGRADUATE ONLINE STUDIES

Javier Pinilla and Guillermo Reher

1. INTRODUCTION

With the arrival of new technologies to the education system in the 21st Century, the number of resources and possibilities available has increased dramatically (Smith & Israel, 2010). In higher education, new ICTs have opened a realm of possibilities in the form of online teaching and resources, far exceeding the limited distance learning methodology of the previous century. Educational systems are now, like information, connected and global, prompting an array of exciting new possibilities (Means, 2010). Physical limitations can be overcome, and virtual teaching facilitates connecting students worldwide, either at the same time or asynchronously. In addition, global connectivity also enables the creation of new networks of students based on similar interests or background (Lave & Wenger, 1991). The time and money saved on distance learning can be invested in continued education, employment or personal duties of any kind.

Turoff et al. (2004) already pointed out that online teaching is an opportunity for multi-level interaction and flexibility. In addition, it can alleviate the psychological burden that a classroom places on introvert students (Davis et al., 2019). However, online learning also represents different challenges demonstrated by numerous studies: higher levels of student attrition; lower levels of engagement; limited motivation; student frustration and feelings of isolation (Butler & Sullivan, 2007; Porto, 2006). Advantages and disadvantages aside, it is clear that online education is now a reality which warrants a greater scientific understanding of the various effects, methodologies and outcomes that it entails.

Despite the differences between face-to-face teaching and on-line teaching, they both have something in common: teaching must try to make students learn high-quality content as much as possible. Ballester (2014) suggests that to reach meaningful learning it is

important to involve students in their own learning process by making them an active part of the process. In addition, many authors, like Laal and Ghodsi (2012) have demonstrated the pedagogical benefits of collaborative learning.

In on-line teaching, both meaningful and collaborative learning can be facilitated through ‘Breakout rooms’, a possibility in major educational platforms like Zoom or Blackboard Collaborate. Breakout rooms consist in splitting the synchronous class in groups, which are provided separate ‘private rooms’ to work in. Students are given a task and a time to carry it out. During that time, students can use their private room in multiple ways, talking and sharing the resources or information, very much like a project table would in a physical classroom environment, but with the added benefit of all students having common internet access and digital tools to work with.

Chandler (2016) has identified three main benefits of using Breakout rooms during online classes:

- They are a useful tool for facilitating collaborative learning and interaction.
- They empower students to contribute to the session plan and content.
- They provide opportunities for peer-to-peer contact.

This author also found limitations in the use of Breakout rooms. Some of them are general to online learning in general: students may be attending an online class but not really be in it meaningfully, thus hampering any chance of actually learning in the process. Other limitations can be caused by various technical difficulties, lack of skills or student confidence using them. Outside the realm of education, Cadieux (2020) has recently published positive results of using Breakout rooms within a workshop. In that case, the intrinsic motivation and participant commitment were key in the successful use of this resource.

In line with these studies, Foronda and Lippincott (2014) applied Breakout rooms in graduate students in nursing. Their experience was quite satisfactory, citing the enjoyment, flexibility, and interactivity of these rooms, to the point that it rivalled physical interaction for its quality. Tonsmann (2014) added that this resource allowed students to apply concepts that had been explained in the main room, hence reinforcing the learning curve.

In contrast, other studies have warned about some inconveniences found using Breakout rooms. One such problem is derived from the inherent problems associated with

group allocation, where the ideal mixing of students from one Breakout activity to another is severely challenged by the random distributions that many programs facilitate, which may not include ‘no repeats’ as a pre-condition (Miller et al., 2021). With a similar concern, the heterogeneity/homogeneity of Breakout groups has proved to have little effect in the overall student satisfaction, as indicated by the unpublished research of Wang & Tokiwa (2021).

Regarding the management of activities within the groups, several caveats have been brought to light. Yamagata-Lynch (2014) indicated that this one resource posed most difficulty during online teaching. This author indicated that the rooms needed to be more hands-on by allocating individual roles to the students and providing a structured framework. This is supported by the recent unpublished research of Fitzgibbons et al. (2021) which found that using prompts for Breakout groups increased the overall learning experience. Saltz & Heckman have proposed, for small Breakout rooms, to use a Structured Pair Activity methodology to better handle the private meeting (2020).

Unfortunately, there is as of yet little specific literature regarding the impact of Breakout rooms in the learning experience, being limited primarily to qualitative descriptions of teacher perception. Student perception and assessment is, therefore, glaringly absent from the discussion. The varied levels and interests of the groups involved, also, impede a meaningful understanding of any potential correlations between method, profile and content. Due to this, the objective of this research is to contribute to the understanding of the pros and cons, for students, of using Breakout rooms in online education.

2. MATERIAL OR METHOD

This study was carried out in the course “Educational Research” of the “Advanced Teaching Competences” Master’s program of the Camilo Jose Cela University in the 2019-2020 edition.

2.1. Sample

A total of 31 students participated in the study, composed of 25 women (age $31 \pm 7,6$) and 6 men (age $31,3 \pm 5,4$). All of them had, at least, a degree in primary education. From this sample, 21 students had no previous knowledge of the course contents, whereas 10

students confirmed they did. All participants belonged to 3 different groups (Group 1, N=10; Group 2, N=11; Group 3, N=10), so the teaching process was replicated three times.

2.2. Material

The teaching platform used for classes was Blackboard Collaborate. All students enjoyed adequate internet connection during the process and no interruptions were registered. To collect data from the participants, a questionnaire was designed and administrated using Google Forms. This questionnaire was completed by the participants immediately after the learning experience. The data collected was analysed using SPSS V.26.0. The reduced sample size allowed non-parametric tests of the results. The professor who conducted the classes was the same professor in the three groups. He had three years' experience in on-line teaching, with over 800 contact hours.

2.3. Methodology

All the students participated in an online class whose objective was to learn the parts that formed an educational research project and how to formulate them properly. To reach this objective, the initial 50 minutes were used by the professor to a lecture on the matter. In this explanation, some examples about how to formulate each part of the project were included: introduction, objectives, hypothesis, methodology, results, discussion, and conclusion. During this time students were allowed to ask questions if needed.

After the lecture, the resource Breakout Rooms was used in order to carry out an activity. Participants in each class were divided into two groups of 5/6 students each. The groups each had private rooms where they could use the following resources at will: microphone, camera, chat or whiteboard. The activity proposed was to, in 40 minutes, formulate an example of an education research project, indicating all the parts outlined during the lecture. During this period, the professor moved from one private room to another to check on the progress, supervise and assist as needed.

After the 40 minutes, all students were summoned to the virtual classroom, where each group shared the project they had designed, receiving general feedback on a group-by-group basis regarding the process and results achieved. Immediately afterwards, students were asked to complete a questionnaire which included the following:

1. Age
2. Gender
3. Did you have previous experience in the topic worked in the class?
4. Rate from 1 to 10 the degree of difficulty of the task (1-very easy, 10-more difficult).
5. Rate from 1 to 10 the degree of precision with which you consider that you have completed the task (1-not completed at all to 10-completed perfectly).
6. How would you rate the task to achieve the expected learning (1-very poorly, 10-very good)?
7. Has collaborative work been useful? Rate from 1 to 10 the degree of usefulness.
8. Would you like to apply what was discussed in this class in your classes with your students? Indicate from 1 to 10 in what grade you would like (1-less, 10 more).
9. How would you assess collaborative learning in the context of university teaching? What strengths and weaknesses have you found? (open answer)

3. RESULTS

Table 1 shows descriptive results obtained in each question divided per group and presented in totals. A Kruskal-Wallis test revealed that no significant differences were found in any variable compared between the three groups comparing group by group. In addition, no differences were found between men and women in any category.

Table 1

Descriptive data, total and split by groups

Variables assessed N=31	Total	Group 1 N=10	Group 2 N=11	Group 3 N=10
Age	31,1±7,2	33,4±6,1	30,9±5,8	28,9±9
Difficulty of the activity	6,2±1,7	5,4±2,5	6,7±1	6,3±1,2
Self-perception of personal performance in the activity	6,7±1,3	6,8±1,4	6,7±1,4	6,6±1,2
Contribution of the activity to reach the learning objective	8±1,5	8,2±1	8,5±1,5	7,3±1,6

Utility of teamwork	8,3±2	8,3±2,4	8,5±1,7	7,9±2
Desire to apply the knowledge acquired during the class with future students	8,4±1,7	8±2,2	8,9±1,6	8,2±1,2

A Spearman correlation test was performed to explore the relationship between the different variables gathered in the questionnaire. In Table 2 the significant relationship between the variables is presented, but the correlation does not reveal any such relation between age, gender or experience with the survey results.

Table 2

Significant relationships between variables ($p < 0,05$)

Variables assessed	Contribution of the activity to reach the learning objective.	Desire to apply the knowledge acquired during the class with future students
Age	0,379	
Self-perception of personal performance in the activity	0,401	
Utility of teamwork	0,570	0,407
Desire to apply the knowledge acquired during the class with future students	0,583	

The last question of the questionnaire, which allowed for open answers, revealed that the qualitative assessment of the experience was in line with the quantitative responses provided earlier. The ideas expressed, however, serve to illustrate and understand in more detail the values rated. Table 3 describes selected positive and negative answers to question 9.

Table 3

Open answers to question 9

Positive	Negative
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Different minds working together think better than only one	Some conflicts can emerge if participants don't agree on a point of view
It facilitates sharing problems and doubts that emerge	If the level of commitment is different between the participants in the group it might be difficult to progress
It is very useful, we all are in a same situation, so all things shared make us learn more	If the connection is made with a smartphone or tablet the participation can be limited because it takes more time to write or to share ideas
In society, there is not only one way to think, so collaborative learning is needed to learn to live in society	There was little collaboration; some participants didn't make any contributions
It is a dynamic way to learn	
It is a great tool because it provides the opportunity to interact in real time	

Certain terms and concepts have been highlighted to reveal certain commonalities which can be summarily described as:

- Positive: the possibility to interact with others.
- Negative: technical and motivational limitations to participation of some members.

4. DISCUSSION

The results suggest that the use of Breakout rooms was perceived positively by the participants, finding in this resource an opportunity to participate more actively in the class, to learn from other classmates and to apply the knowledge learned during the lecture part. The two main strengths of using Breakout rooms stem from the fact that they allow to learn collaboratively along with other participants: there is greater individual knowledge acquisition, and students become empowered by adopting an active role in their own learning process. This bears out the results found by Ballester, which found that

these Breakout activities contributed to build more meaningful learning (Ballester Vallori, 2014), also echoing the benefits identified by Chandler (2016).

The lack of significant differences between groups in the results and the lack of any correlation with other variables such as previous experience and gender seems to support that there was no effect of other factors in student perception of Breakout activities. In addition, results also show internal consistency between groups.

Although the overall results were positive, it is relevant to pay close attention to those testimonies that rated with a failing grade (5 of 10) any of the questions to rate the experience positively. Only one of 31 students rated below that bar the activity when assessing whether it had contributed to attain the learning objective. The qualitative analysis that this participant made indicated that not all the members in his Breakout group maintained the same commitment.

Three participants rated also rated 4 regarding how useful the collaborative work was. In the qualitative analysis they indicated it was difficult to reach an agreement, that not all participants maintained the same implication and that the lack of confidence was a barrier to participate. This lack of control of participation was in line with the disadvantages found in online studies in the literature (Butler & Sullivan, 2007; Porto, 2006).

The significant relationships found by applying Spearman correlation test makes sense with the results. It seems coherent that the participants that found themselves more immersed in the activity considered that it contributed to reach the learning objective. These relationships reveal that the quality of teamwork is a key factor to make Breakout rooms useful to reach the learning objective, warranting paying greater attention to this when employing this resource during online classes. It is worthwhile to consider that, in the few instances where Breakout activities have been contrasted with class-wide activities, the latter has often come out on top (Fitzgibbons et al., 2021; Miranda et al., 2021), indicating that students may value more the actual group-work dimension, than the format of the Breakout room per se.

Some actions that might be applied to ensure the participation of all teammates are:

- To ask confirmation student per student that they are ready to be included in a private room. With this, it is possible to detect those students that are apparently connected, but not really engaged in the class.

- A small test of contents can be administered in order to ensure that all participants have understood the main ideas from the master class.
- To include one supervisor (professor) on each group to supervise that all participants are actively working and contributing to the team.
- To assign individual roles with a specific task.

A limitation of this research is that the motivation of the participants could have been assessed in order to determine whether it affected student participation. This study should be replicated in other contexts in order to prove if the results found are born out in different class sizes, levels and subjects.

5. CONCLUSIONS

This study indicates that Breakout rooms are a useful tool for online teaching, since they successfully emulate in-class group activities. Students consider them to meet educational needs in lieu of face-to-face interaction. Their success, however, hinges on the definition of clear-cut goals in order to provide a semblance of structure, and ward off any possible slacking due to lack of motivation and engagement. In any case, they are not adequate substitutes for their in-class counterparts, and are also, at times, less satisfactory than class debates. Further data is needed to ascertain whether there are optimal class-sizes and education levels for these type of activities.

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