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ORIGINAL ARTICLE

Interactive groups and their influence on academic performance in the primary classroom: a case study

Grupos interactivos y su influencia en el rendimiento académico en el aula de primaria: estudio de caso

Grupos interativos e sua influência no desempenho acadêmico na sala de aula primária: estudo de caso

Belén Suárez-Lantarón[1]
Universidad de Extremadura, Badajoz-Extremadura, España
https://orcid.org/0000-0003-2917-0495
bslantaron@unex.es

Ángela García-Martínez
Universidad de Extremadura, Badajoz-Extremadura, España
https://orcid.org/0000-0002-2443-639X
agmartinez@unex.es

ABSTRACT. The development of this work aims to know, through the implementation of interactive groups, if this model allows the improvement of academic performance, the development of social skills, teamwork, cooperative attitudes and the acceptance of diversity. For this, a qualitative method is used through a case study, implemented in a primary classroom of a public center in the city of Badajoz (Spain). The instruments to collect the information have been the average marks obtained by the students (pre and post-test), the observation by teachers and volunteers, and a questionnaire for the students. The results confirm that the students obtain better grades and show satisfaction with this work model. It can be concluded. Therefore, that interactive groups implement the improvement of academic results but also favor the achievement of goals or purposes such as improved coexistence or motivation.

RESUMEN. El desarrollo de este trabajo tiene por objeto conocer, mediante la implementación de grupos interactivos, si dicho modelo permite la mejora del rendimiento académico, el desarrollo de habilidades sociales, el trabajo en equipo, actitudes de cooperación y la aceptación de la diversidad. Para ello, se utiliza un método cualitativo mediante un estudio de caso, implementado en un aula de primaria de un centro público en la ciudad de Badajoz (España). Los instrumentos para recoger la información han sido las notas medias obtenidas por el alumnado (pre y postest), la observación por parte de docentes y voluntarios, así como un cuestionario para el alumnado. Los resultados confirman que el alumnado obtiene mejores calificaciones, además muestra satisfacción por este

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[1] Dr. Psychology and Educational Sciences. Bachelor of Psychopedagogy. **Correspondencia:** bslantaron@unex.es

modelo de trabajo. Se puede concluir, por tanto, que los grupos interactivos implementan la mejora de resultados académicos, pero también favorecen el logro de metas o propósitos como la mejora de la convivencia o la motivación.

PALAVRAS-CHAVE	RESUMO. O desenvolvimento deste trabalho visa saber, através da implementação de grupos interativos, se este modelo permite a melhoria do desempenho acadêmico, o desenvolvimento de habilidades sociais, o trabalho em equipe, as atitudes cooperativas e a aceitação da diversidade. Para tanto, utiliza-se um método qualitativo por meio de um estudo de caso, implementado em uma sala de aula do ensino fundamental de um centro público da cidade de Badajoz (Espanha). Os instrumentos de coleta das informações foram as notas médias obtidas pelos alunos (pré e pós-teste), a observação dos professores e voluntários, bem como um questionário para os alunos. Os resultados confirmam que os alunos obtêm melhores notas, e também mostram satisfação com este modelo de trabalho. Pode-se concluir, portanto, que os grupos interativos implementam a melhoria dos resultados acadêmicos, mas também favorecem o alcance de metas ou propósitos como melhoria da convivência ou motivação.
aprendizagem, convivência, grupos interativos, inclusão educacional, motivação.	

1. INTRODUCTION

Diversity is a reality present in any center and educational stage classrooms. Teachers face it, on many occasions with innovative proposals because they provide excellent results and favor the achievement of goals or purposes that with more traditional methodologies would be more expensive or would not be achieved (Rosales, 2013).

It must be understood that innovation involves a change in pedagogical action to improve the quality of education and that educational practice is innovative for everyone (especially the most disadvantaged students) to develop skills to live (Pascual, 2019). From a committed and transformative perspective, it is observed that innovation can offer an efficient response to the search for social justice, equality of opportunities, and collaboration (Zabala citado por Almirall & Huguet, 2019). This ensures the learning of the entire educational community without any discrimination (R. García & Escudero, 2021; A. Rodríguez, 2017).

There are interactive learning groups among the educational innovation projects developed in classrooms and linked to the inclusive vision of learning communities. These are described as a way that allows the classroom to be organized, contrary to segregation, which consists of establishing groups that are as heterogeneous as possible (Ordóñez et al., 2017). The students are distributed into small groups of 4-5 members who must present different gender, learning levels, cultures, personalities, family history, etc. Every 15 or 20 minutes, change their activity (Darretxe et al., 2021). Change that influences and generates increased motivation, involving them at work. In addition, it helps students to face new situations and stimulates their learning (Valls et al., 2016).

Each group is supervised by a volunteer (an adult: teacher, tutor, family member, community member, etc.). Their role, as Ordóñez et al. (2017) indicate, is not to explain the contents related to the activity; that is the role of the teacher. Volunteering is in charge of introducing the movement, guiding the group, favoring debate, and

promoting respect and solidarity among the members (Vieira & Puigdellívol, 2013). These interactions with volunteering are shown as an essential element in the improvement process and the student's school success in the interactive group model (Amaro et al., 2020; J. García et al., 2021).

This grouping model can work in any subject or area and at any educational stage. Some examples are: Melgar (2015) in children, Peirats and López (2014) in primary, Olaya et al. (2020), Píriz, (2015) y Sánchez (2018) in secondary school or Díaz (2021) and Ponce (2017). In university, the flexibility of time and space, group and individual learning, optimization of personal, material, and financial resources, and direct and personalized monitoring of students should be considered in its planning.

For authors such as Álvarez (2017) or Fernández (2015) his work model encourages collective dialogue since it is the group that must find the appropriate solution to the proposed problem (task), based on the opinion of the rest of the members. Therefore, interaction is a critical factor in the activity. The important thing is to promote interactions with high expectations that mark the success of the action (Valls et al., 2016).

The interactive groups, as well as the rest of the successful actions of learning communities, aim to improve learning through interactions that are established between all the participants (students, teachers, families, and volunteers) as well as reduce conflicts in the classroom (M. García et al., 2016; Peirats & López, 2014; Valls & Kyriakides, 2013).

This philosophy already shared by Ainscow (2001) is reiterated in more current studies Cortés et al. (2018), Peirats and López (2014), and Torres (2012) are some examples that defend that this form of classroom organization benefits all students. In addition, it shows one of the essential characteristics of inclusive projects, since it allows improving the conditions that the classroom or school offers (Medina, 2021; Villarreal et al., 2021) Specifically, to dismantle prejudices and misgivings towards the institution school sharing new resources, offering good coexistence and destroying barriers, meeting the needs of all students from their usual activities (Fernández, 2015; Medina, 2021).

You can find studies such as those by López and Ordóñez (2021), Palacios and Álvarez (2015), Ponce (2017), o Rivera et al. (2017) show that among the benefits that can be achieved working in interactive groups is the decrease in competitiveness and the promotion of solidarity. In addition, that simultaneously increases academic learning and student participation in classes.

Along the same lines, authors such as Puigdellívol (1998) and Valls et al. (2011) point out that this grouping model is being increasingly used due to the excellent results it achieves, both at an academic and social level, since it allows working on aspects such as teamwork, solidarity, communication skills, respect, self-esteem, etc.

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For Álvarez (2017) this increased interest in interactive groups is linked to promoting improvements in at least five areas: learning outcomes, coexistence, inclusion, motivation for knowledge, and community participation. Educational. This aspect can be verified in the numerous literature that shows the implementation of interactive groups in all educational stages and their optimal results in the development of competencies, skills, or values, as well as in the improvement of academic results in subjects such as mathematics, language, science, physical education, etc. (Díaz, 2021; Gutiérrez, 2019; Olaya et al., 2020; Sánchez, 2018).

Under this context, the objective of this pilot study is to use interactive groups as a teaching-learning strategy in a primary classroom of a public center located in the city of Badajoz (Spain). It is intended that students with lower academic performance can benefit from the work rhythm of their peers, also promoting teamwork and cooperative attitudes.

2. METHOD

The chosen method is the unique and situational case study that allows observing in detail a particular context, emphasizing the understanding of how and why something happens, has developed, or has come to occur in a specific setting (Wood & Smith, 2018).

The potential of the case study is that it allows us to focus on a specific case and identify the interactive processes that make it up and its flexibility and applicability to realistic situations. It is characterized because it supposes a description of the problem under study, of the interested parties, of the motives, and its flexible design (Albert, 2007; Sanahuja, 2020).

The intention of this study, as already indicated above, is to know, through the implementation of interactive groups in a primary school classroom, if the said model allows the improvement of the group's academic performance, the development of social skills, teamwork, cooperative attitudes and acceptance of diversity.

To obtain information on the improvement of academic performance, the results obtained by the group under study were compared in the subjects of the Spanish language, mathematics, natural sciences, social sciences, English, and plastic arts. In addition, the average marks obtained in these subjects were used as pretest and posttest measures.

Furthermore, as Wood and Smith (2018) point out, the wealthiest and most valuable case studies will outline many sources of evidence obtained through a wide range of research tools. Likewise, to triangulate the information and improve the scientific rigor of the research, direct and systematized observation of the students

by teachers and volunteers was used. In addition to a questionnaire, the students evaluate the work model and collect the satisfaction perceived by them (Cubo et al., 2011; Martínez & Castellanos, 2014).

The records to collect the information related to the observation of teachers and volunteers and the questionnaire for the students are constructed "ad hoc". However, its design has been validated by the working group, considering its suitability and relevance. The work of Galafat et al. (2016) is taken as a reference when using the items proposed in the said study; validity and reliability are considered relevant.

In the case of the observation made by the volunteer, a record is used (see table 1) in the work tables. This register collects data on the help given or received by the student, expression, completion of the task, and cooperation with the rest of their classmates.

Table 1.

Rubric for voluntary observation record.

Interactive Groups Evaluation					
Volunteer:			Session:		
Activity:			Date:		
GROUP 1	Help	Is helped	Is expressed correctly	Finishes the task only with help	Cooperates

Source: Jiménez et al., 2017.

Similarly, the tutor or teacher responsible for the Interactive Group collects information from the session by observing the development of the activity, using a template (see table 2).

Table 2.

Teacher observations record on the development of the interactive group

TEACHER OBSERVATIONS	
Group 1- Students:	Observations:
Table 1	
Table 2	
Table 3	
Table 4	
Table 5	

Source: Jiménez et al., 2017

The information obtained through direct and systematic observation was shared and debated in a discussion group consisting of two or three teachers, one or two volunteers, and the researcher. The script for the discussion questions of this group is raised using items from work (Galafat et al., 2016).

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The evaluation questionnaire by the students was distributed in 2 sections. In the first one, nine items were raised related to group work and learning, in which an assessment was requested with the excellent, reasonably good, regular options, and I have to improve it. The objective of this section is to know how they perceive their individual and group work.

The second section raised open questions in which they could write text freely about their feeling and experience during the experience: what they liked the most and what they wanted the least, what things they have learned, and if they prefer the job individual or group, why. Likewise, they were asked to indicate when they felt the happiest working in a group.

The participant sample comprises 22 students in the fourth year of the primary stage. These teachers teach classes in the said course, and a volunteer, a direct education student, acted as a support volunteer and observer in the group interactive.

Next, the procedure followed in the development and implementation of the project is exposed.

3. PROCEDURE AND IMPLEMENTATION

The context in which this study is carried out is the Navarro general public center, dependent on the Ministry of Education, Science and Technology of the Junta de Extremadura, in which infant and primary education are taught. It is located in the center of Badajoz (Spain). Its location allows it to receive students from different city areas and cultural environments. These students have diverse interests, which implies that the social and cultural level of the families of the schooled students is medium-low, presenting, in some cases, severe economic problems. Another note of identity of this center is that it serves, among others, students with hearing impairments, as it is a preferential schooling center for these cases.

These issues cause the center to try to integrate all the students, avoiding school failure as far as possible. Although there are families who prefer not to get involved, they generally take into account the center's advice. They are participants in the progress of their children during the educational process.

The project's design to work in interactive groups starts with the objective of achieving a positive impact on the students' academic performance. It is considered that those students who have low academic performance can benefit from the work rhythm of other classmates. The situation that fosters attitudes of cooperation and altruism.

This mode of work (interactive groups) is chosen based on other previous studies in which this model is positively valued, noting that learning accelerates and relationships between students are improved, producing

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ties of friendship and solidarity (Chocarro & Sáenz, 2015; Elboj & Niemelä, 2010; Jiménez et al., 2017; López & Ordóñez, 2021; Palacios & Álvarez, 2015).

The project is designed as a pilot experience in a classroom of the fourth year of primary education attended by twenty-two students. Of these, three present educational needs due to their hearing impairment (in two of the cases) and attention disorder with hyperactivity (in the third).

Considering the challenges pointed out by Villarreal et al. (2021) in implementing interactive groups in the classroom. They are mainly related to "the involvement of all community members, the design of instrumental activities and the extra time required to implement the strategy" (p. 58). Previous meetings were held with the management team, teachers, and families seeking involvement in the project.

Furthermore, as Chocarro and Mollà (2017) express that, working with interactive groups requires "[…] a good planning of the calendar and having, if possible, a large number of permanent volunteers" (p. 68). Therefore, in the planning work of the project, there was the collaboration of teachers and tutors who contributed to the intervention plan regarding the distribution of students in heterogeneous groups, design, and development of activities that would be carried out during the process. The volunteers for the implementation in the classroom have been undergraduate education students who carry out training practices in the educational center.

The temporality proposed for the implementation of the project is two and a half months, the duration of the period corresponding to the second evaluation of the students. During this time, the students of the group under study will remain distributed and working in interactive groups throughout the school day, working on mathematics, language, natural sciences, social sciences, English, and plastic arts. The activities carried out in the interactive groups are activities for the reinforcement, consolidation, and expansion of the contents of the subjects above. Still, elementary cognitive operations such as memory, attention, or reasoning are also worked on.

The main tools that have been used to evaluate said intervention have been previously explained.

4. RESULTS AND DISCUSSION

The results found are presented based on the techniques used to collect information about learning outcomes, direct observation carried out in the classroom, and the evaluation carried out by the students.

3.1. Learning outcomes

In this case, the comparison of the means obtained in the pre- and post-intervention subjects is used individually. The average grade obtained by each student in the evaluation before the intervention (when they worked

individually) and the subsequent review (after working in interactive groups) was compared. These results show an improvement in all participating students and, although Figure 1 collects the data obtained in the area of Spanish language and literature, this improvement occurs in all the subjects studied through interactive groups.

Figure 1.

Comparison of the individual average mark before and after the test in Language
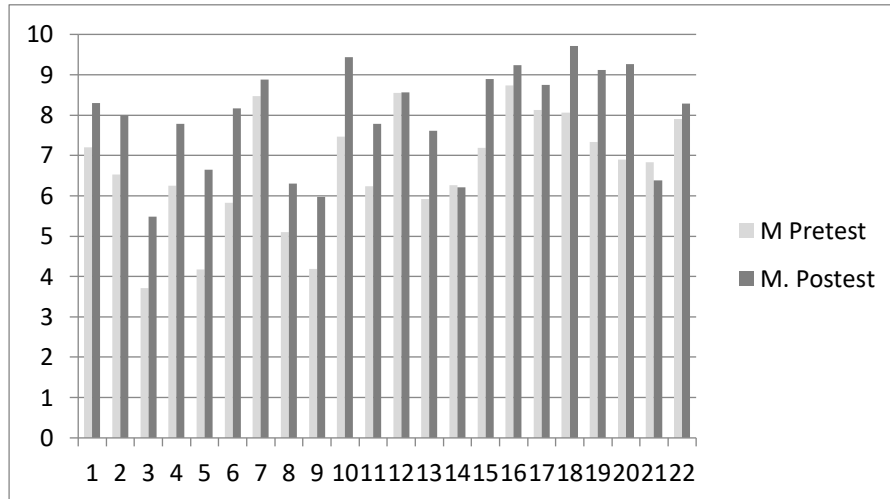
Note. The graph represents the comparison of the average grade obtained in Spanish language and literature individually by the students before working in interactive groups (pretest) and after having worked in interactive groups (posttest). Source: self-made.

In addition, the average grade for the classroom (the entire group), before and after the intervention, is calculated and compared. As shown in Figure 2, improvement is seen in all the subjects observed, with the most significant difference in Spanish language and literature.

Figure 2.

Comparison of average pre and post-test scores of the group.

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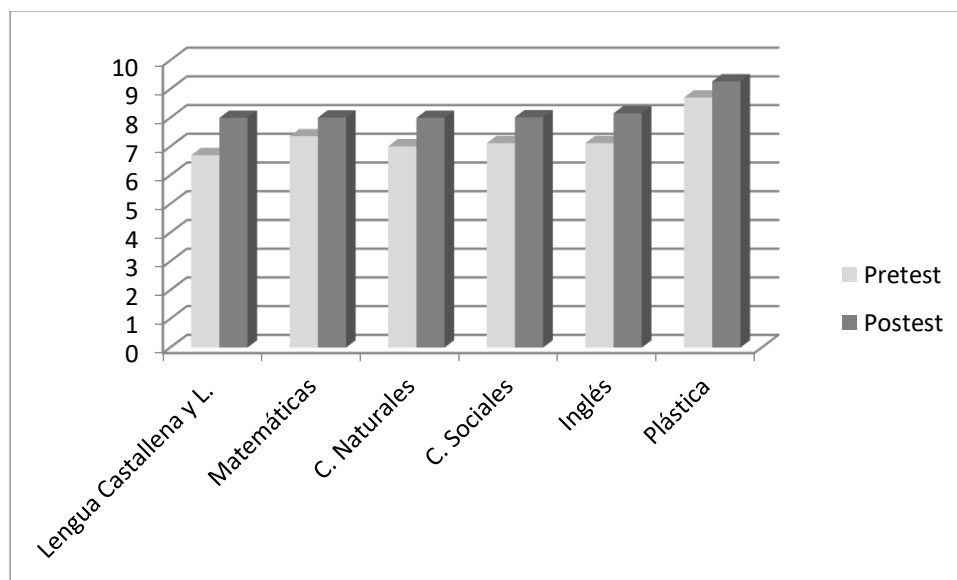
Note. The figure represents the comparison between the group's average score before the implementation of the interactive groups (pretest) and after having worked in interactive groups (posttest) in the different subjects in which the study has been carried out. Source: self-made.

As can be seen, there is a clear improvement in the learning results obtained, which occurs in all subjects and affects all students. It also includes those whose scores had been lower in the pre-intervention evaluation. It follows, therefore, that working through interactive groups is a benefit in the teaching-learning process, a question that confirms the results obtained in previous studies on the subject (Álvarez, 2017; Medina, 2021; Núñez et al., 2017; Rivera et al., 2017).

3.2. Observation results

This observation was mainly focused on how the students worked in the interactive groups. The main results recorded by teachers about group work have been:

- The students showed their different personalities, but they managed to complement each other well.
- They helped each other.
- They showed joy when one of the classmates performed the task correctly.
- The most advanced students gave correct instructions to their classmates when they observed that they had difficulty performing the task or were performing it incorrectly.
- They offered support in the most challenging moments and were continually encouraged, especially if they perceived that one of them was down.
- They always managed to reach an agreement through dialogue, being understanding and respectful with the rest in the event of a conflict.

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- The group tried that no component would be left behind; they showed union and a feeling of equals.
- Más información sobre este texto de origen.

These results were shared and corroborated in the discussion groups established with teachers and volunteers, showing that interactive groups provide an indirect way of learning by observing behaviors and interactions within the group. This aspect was already developed by Bandura in 1986 in his Social Cognitive Theory when he exposed the way we learn from our social experiences. The theory that gives a prominent role to others, to the influence of other people's behavior on learning, personality, and behavior itself (R. Rodríguez & Cantero, 2020). In this sense, interactive groups observe thoughts, affections, and behaviors. By watching others, you learn about what to do and new behaviors that guide action.

However, we must not lose sight of the fact that to obtain good results; it is essential to ensure that adults (teachers and volunteers) "maintain high expectations and that acts of power are replaced by dialogical acts, which promote cognitive conflict, to learn significantly and promote a climate of cooperation and mutual help (Muntaner et al., 2015, p. 150).

The results obtained by Chocarro and Sáenz (2015), M. García et al. (2016), López and Ordóñez (2021), Oro and Palomar (2018) are confirmed, who affirm that interactive groups also promote a positive vision of diversity by recognizing the value of being able to help and receive help, especially when students participate together in the same activity, despite differences in level or specific difficulties that may arise.

This study has been able to verify that interactive groups favor the participation of all students. Furthermore, coinciding with Villarreal et al., (2021) it was observed that these affect more concretely and positively in those students who present some specific learning need. In addition, they facilitate work in the same group and activities, promoting self-expression, security, tranquility, and trust that allows the development of interactions that favor the exchange of opinions and knowledge. This will enable students to obtain better performance (Álvarez, 2017; Iglesias et al., 2015; Píriz, 2015).

4.3. Results of the evaluation carried out by the students

As previously indicated, the questionnaire for students requested that some questions be scored with the options: excellent, reasonably good, fair, and I have to improve it.

In addition, open questions were included to express themselves with their words and know the satisfaction and motivation achieved. The results found about the assessment questions are presented in Table 3.

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Table 3.

Student results assessment scale questions

ITEM	RESULTS
Interest in group work	More than half of the students (59%) rated the option as excellent and 32% fairly good. However, only 4% indicated that it was regular.
How they have felt working in a group	More than half (64%) considered it excellent and 32% quite good, while 4% indicated the regular option.
Individual work within the group	Only 5% said the option was excellent, and 45% scored pretty well. However, 18% indicate that this aspect should be improved.
Help given to colleagues	More than half (64%) indicated the excellent option and 32% the pretty good choice. Only 4% indicated that they should improve this aspect.
Respect for the opinion of colleagues	77% indicated an excellent answer. While 14% marked the regular answer and 9% selected the answer, I have to improve it.
Active participation in activities	73% of the students considered excellent and 13% quite good, while 14% were positioned in a regular.
Learning working in a group	A large majority (93%) indicated excellent and 5% quite good.
You have fun working in a group	45% of the students voted the answer excellent, followed by 41% who selected the solution quite well. 9% marked the answer 'regular,' and 5% voted 'I have to improve it'.

Source: self-made

The results obtained in the open questions have been the following:

What does work in a group mean to you?

The three responses that they have used the most are that for them working in a group means "fun", "helping each other" and "supporting each other". Other less used responses were that working in a group implies positivity, happiness, cooperative learning, and meeting other colleagues.

Which of the activities carried out in class working in a group did you like the most?

The most repeated response has been the 'Scape Room', in which they had to work as a team to find all the tests and solve them together, providing different ideas and solutions. Other responses used by students were science experiments, jobs in different areas, and meeting the rest of their peers.

You have learned a lot?

100% of the answers obtained correspond to a yes.

If the answer is yes, what have you learned?

The responses repeated the most have been "to be good companions", "to collaborate and to get to know the rest". Other responses used were that they have learned "to give their opinion", "to be kind", "to respect the opinions of others", "to help whenever possible," and "to love each other even more".

Do you prefer to work individually at the beginning of the course or do you like to work in a group as we have been doing so far?

The results obtained indicate that 100% of the responses prefer continuing to work in a group.

Asked why*?*

The most frequently used responses were that they prefer to work in a group rather than individually because they have fun, help each other, and can solve their doubts among themselves. Different responses used were that they prefer to work in a group because they feel much more accompanied, share their things, support each other, and are pleased working as a team.

Indicate the moment when you felt the happiest working in a group.

The favorite moments chosen by the students were the 'Scape Room' activity and the workstations. Other responses used were the activity of the municipalities and the activity of the science experiments. It is striking that all the chosen activities consist of tasks that could only be solved by working as a team.

These aspects show that the improvement observed in learning outcomes is also linked to the high motivation and satisfaction offered by the students. In this sense, works such as that of Amaro et al. (2020), J. García et al., (2021) or Peirats y López (2014) show that interactive groups are considered motivational learning practices and the response obtained by the students confirm this. Furthermore, this motivation can be linked to the fact that work or tasks are performed more dynamically and perceived as a game. Likewise, cooperation between

colleagues is also motivating (Molina et al., 2021; Píriz, 2015). Therefore, it is considered that these factors can influence students to be more attentive, an aspect that promotes improved performance.

In addition, it is observed that working in interactive groups has provided them an opportunity to get to know each other better and exchange their perceptions, share the same space, consider themselves members of the group, develop feelings of belonging and companionship. In this line, works such as that of Núñez et al., (2017) already appreciated that dialogue actions such as "listening carefully", "giving equal opportunities for participation" or "accepting arguments that contribute" helped to improve relationships not only between students, also of students with teachers and, therefore, to create a better classroom climate.

5. CONCLUSIONS

The exposed results corroborate that work through interactive groups is related to better learning outcomes. Likewise, they allow boys and girls to spend a high proportion of time involved in the task they are doing, either in autonomous work or collaborating with the rest of their colleagues.

It is also observed that they promote a positive vision of diversity and the development of values. In this sense, by recognizing the importance of being able to help or receive help, especially when students participate together in the same activity, despite the differences in level or the specific difficulties that they present.

Another of the benefits observed in working through interactive groups is inclusion, finding that interactive groups favor the participation of all students and that they affect, specifically in a positive way, those students who present a specific learning need.

The results also corroborate that working in interactive groups promotes a favorable classroom climate and improves relationships between students and teachers. The results show that working through interactive groups has provided an opportunity to get to know each other better and exchange their perceptions, share the same space, consider themselves members of the group, developing a feeling of belonging and companionship.

From the above, it can be concluded that the statements mentioned at the beginning of this work are confirmed concerning innovative strategies and how they provide positive results, not only concerning learning but also in the achievement of goals or purposes such as improvement of coexistence or motivation. More specifically, work through interactive groups enhances inclusive education, favors (dialogic) learning, and strengthens the educational community.

Finally, note that this has been a case study in a specific classroom, which may limit the investigation. For this reason, they propose future lines of action to develop broader studies, taking more classrooms, centers, and different educational stages, so that a generalization and comparison of the results obtained is allowed.

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