



# COLLABORATIVE PROBLEM-SOLVING IN GROUP-BASED CREATION PROCESSES OF PRE-SERVICE PHYSICAL EDUCATION TEACHERS

*RESOLUÇÃO COLABORATIVA DE PROBLEMAS NOS PROCESSOS  
DE CRIAÇÃO EM GRUPOS DE PROFESSORES EM FORMAÇÃO  
EM EF* 

*RESOLUCIÓN COLABORATIVA DE PROBLEMAS EN LOS  
PROCESOS DE CREACIÓN GRUPAL DEL PROFESORADO EN  
FORMACIÓN DE EF* 

 <https://doi.org/10.22456/1982-8918.145786>

 **Alba González-Palomares\*** <albagonpa@usal.es>

 **Inma Canales-Lacruz\*\*** <bromato@unizar.es>

 **Ana Rey-Cao\*\*\*** <anacao@uvigo.gal>

\* Universidad de Salamanca, Facultad de Educación. Salamanca, Spain.

\*\* Universidad de Zaragoza, Facultad de Educación. Zaragoza, Spain.

\*\*\* Universidade de Vigo, Facultad de Ciencias da Educación e do Deporte.  
Pontevedra, Spain.

**Abstract:** The aim of this study was to analyse collaborative negotiation in group creation processes. Participants were students enrolled in the Body Expression course which is part of the Physical Activity and Sports Sciences Degree curriculum at the Pontifical University of Salamanca (Spain). Experiences were collected through a group report, and content analysis was conducted using the QSR-NVivo 11 software. The results revealed an intuitive tendency towards democratic management and a positive evaluation of contrasting opinions. A tendency towards consensus and prompt acceptance of ideas that arose from “enlightenment” was also shown. Brainstorming was identified as a facilitative tool. Group cohesion and commitment were considered highly positive aspects. Leadership did not appear to be an essential factor for the process to function properly. All these elements fostered creativity and compensated for the students’ lack of artistic and expressive experience.

**Keywords:** Interdisciplinary Practices. Collaborative Negotiation. Creativity. Teacher Training.

Received on: Feb. 13, 2025  
Approved on: Aug. 16, 2025  
Published in: Dec. 04, 2025



This is an article published  
in open access under  
the Creative Commons  
Attribution 4.0 (CC BY 4.0)

## 1 INTRODUCTION

Artistically expressive physical activities are part of the content of Physical Education in schools in Spain (España, 2014, 2015b). They are characterised by their emotional engagement, as they require creative solutions driven by imagination and the application of cognitive strategies that allow feelings and ideas to be communicated based on motor intervention (Hanna, 2008). In contrast, the remaining content of which Physical Education in Spain is comprised can be distinguished by the predominance of motor elitism, the reproduction of motor stereotypes and the combination of performance discourse, masculinity, healthism and the ideal body (Beltrán-Carrillo; Devís-Devís, 2019).

PE students show a lack of experience and a certain fear when asked to perform artistic expressive tasks that require creative behaviours associated with production and not reproduction (Lafuente; Hortigüela, 2021). Indeed, to address these limitations, some studies carried out within the world of dance (Leach; Stevens, 2020) and the field of cultural psychology of creativity (Glăveanu, 2015) advocate incorporating group creation processes as opposed to individual creation.

Along the same lines, Giguere (2021) argues that dance education improves social cognition when creative proposals are generated by group production, triggering a collaborative social commitment that allows for diverging responses, requiring tolerance of ambiguity and a diversity of ideas. Furthermore, individuals must coexist within a social composition, sharing collective thought processes, which facilitates the group project in accordance with their own desires.

Other studies also affirm that social interaction fosters group creation processes, with consensus serving as the main decision-making tool (Canales-Lacruz; Rovira, 2021; Canales-Lacruz; González-Palomares; Rovira, 2020; Canales-Lacruz *et al.*, 2021; Canales-Lacruz *et al.*, 2024). Decisions reached by consensus are facilitated by the familiarity among members, generating significant group bonding and positive environments for the exchange of ideas (Canales-Lacruz *et al.*, 2024). Another factor that fosters the creation process is the inclusion of an initial brainstorming phase. This stimulates the fluidity and divergence of ideas, helping students overcome the typical mental blocks they experience at the beginning of a production (Canales-Lacruz; González-Palomares; Rovira, 2020; Canales-Lacruz *et al.*, 2021). In the face of such a diversity of ideas, creative teams employ group discussion techniques that facilitate listening and debate in order to reach consensus.

Numerous studies establish the need to relate the creation process to its social environment (Fischer; Oget; Cavalluci, 2016). Glăveanu (2015) proposes the *We-Paradigm* in contrast to the individual paradigms of creativity. He places social interaction, communication, and collaboration at the forefront, assuming that the context in which the process originates is social and must, therefore, constitute and influence said process. Group creative processes can lead to conflicts, thereby creating a pedagogical scenario in which negotiation and dialogue can be included. These social skills are necessary for the new globalised socialisation in which individuals must coexist within both homogeneity and heterogeneity (Molina, 2005). In a review,

Turner (2016) identified three types of conflicts whose origins lie in teamwork: a) task conflict — coherence, performance, definition, etc.; b) relationship conflict — affective issues; and c) process conflict — delegation of tasks. The author found a positive association between task conflict and group performance. Therefore, higher levels of task conflict corresponded to greater constructive engagement.

To develop conflict-resolution skills, new integrative negotiation strategies are required (Metcalf *et al.*, 2007) that break with the traditional perspective of gain as a static element, replacing it with the consideration of its size as dynamic. In order to achieve this new integrative negotiation strategy, trust and friendship among the members of the group must be encouraged (Metcalf *et al.*, 2007). Shared knowledge endeavor a collaborative enterprise in which negotiation strategies based on listening must be developed (Miranda; Goñi; Hilliger, 2021).

Research by Ahn, Sutherland and Bednarek (2010) applied and established this type of integrative negotiation. According to the accounts given by the participants, it was revealed that intensity, wealth of context, and ambiguity provided a creative, rich, and interesting format with which to stimulate the learning process.

In order to offset the complexity of group decisions, some studies consider it necessary to include leadership to expedite these processes (Bixter; Luhmann, 2020; Egan *et al.*, 2022; Henningsen *et al.*, 2004). Henningsen *et al.* (2004) conducted a study in which they compared the results regarding team members' acceptance of a randomly selected leader versus a leader chosen systematically. The team members accepted random leaders better. It seems that chosen leaders try to assert their positions more strongly, which leads them to be perceived as more reactive by the group. By contrast, Bixter and Luhmann (2020) established that if the members of the groups had reasons for believing that the leaders lacked some degree of experience or relevant knowledge, their decisions were likely to be taken more independently of the leader. When the members of a group consider that the leader is experienced and adheres to a normative standard, they are likely to allow themselves to be influenced by the leader. The positive support of leadership insofar as teachers' collaborative learning is concerned will not be determined by its existence alone, given that studies conducted with active teaching staff are not conclusive in this respect (Wallen; Tormey, 2019). Its positive contribution will also be determined by whether or not it is empathic and shared.

Concerning training future teachers, research on collaborative work is also attempting to discern what implications the development of negotiation skills has for their future competence, especially in the Professional Learning Community. In this respect, Lefstein *et al.* (2020) carried out a systematic review of active teachers' collaborative works and concluded that, although any research done up until then had been theoretically and methodologically vague, a significant number of studies demonstrated the importance of three elements that encourage participation: mutual trust, equal integration, and dialogue-based exploration. Furthermore, studies describe certain tools that might facilitate debate, among them being the use of protocols and the incorporation of negotiation mediators.

With regard to negotiation mediators, Koivuniemi, Järvenoja, and Järvelä (2018) studied the challenges faced by 43 trainee teachers in Finland in collaborative work situations. In some of the situations, the group leader helped with the commitment to the work, and this was experienced as a reduction in students' small motivational challenges.

This article aims to analyse collective negotiation in the group creation processes of trainee teachers. The specific aims are: a) to establish the characteristics of the negotiation strategy in group creation processes; and b) to identify the factors that facilitate and hinder collective negotiation.

## 2 METHOD

### 2.1 PARTICIPANTS

The study's target population consisted of university students enrolled in the Body Expression course, part of the fourth year's curriculum for the Physical Activity and Sports Sciences Degree at Pontifical University of Salamanca, Spain. The sample was randomly selected and included 91 participants — 79 men and 12 women — with an average age of 21.33.

The inclusion criteria were as follows: a) to attend 80% of the practical sessions; and b) to form a part of a work team for the group creation project. Six students were excluded for the former reason and one for the latter.

### 2.2 INSTRUMENT

A collection of the students' experiences was conducted via a group report drawn up by each of the 20 creative teams. The report was structured in four parts, the same number of phases as those drawn up for the group creation process (Rovira, 2019). At the end of each phase, the benefits and/or hindrances perceived with regard to the collective negotiation generated by the group creation process were set out. To analyse the perceptions recorded in the group reports, content analysis was used. Table 1 shows the category systems designed for this analysis (adapted from Canales-Lacruz *et al.*, 2021).

Chart 1 - Category system

DIMENSION	CATEGORY	INDICATOR
1. Collective negotiation	1.1. Process	1.1.1. Enlightenment
		1.1.2. Democratic-assembly process
		1.1.3. Dissent
		1.1.4. Consensus
	1.2. Familiarity	1.2.1. Compensation for the lack of fluidity
		1.2.2. Group safety
	1.3. Group implication	1.3.1. Commitment to the group
	1.4. Leadership	1.4.1. Leader/s

Source: Prepared by the authors adapted from Canales-Lacruz *et al.* (2021)

This category system identifies the collective negotiation factors that hinder and facilitate the creation process.

The process (category 1.1) is understood to be the period of time established for the decisions generated in the process. Enlightenment (indicator 1.1.1) refers to the awareness created in the group by some of the ideas generated and which has made immediate consensus possible. The discussion-style democratic process (indicator 1.1.2) refers to the way in which consensus is reached, normally occurring through group discussion. Dissent (indicator 1.1.3) is the lack of consensus. Indicator 1.1.4, which refers to consensus, integrates all the fragments that talk of consensus but do not point out the reason why such a consensus was reached.

Familiarity (category 1.2) refers to the sense of trust established among group members. Compensation for the lack of fluidity (indicator 1.2.1) refers to the reparation exercised by the group when faced with the inadequacies of one of the group members, as well as on the contrary, that is, exercised by the individual towards the group. Group safety (indicator 1.2.2) is the consolidation of the group to establish safety and protection for each of the group's individuals.

Group implication (category 1.3) refers to the members' level of commitment. It has only one indicator, commitment to the group (indicator 1.3.1), which refers to the obligation acquired with the group.

Leadership (category 1.4) has only one indicator, which refers to the presence of one or several leaders.

## 2.3 PROCEDURE

The creation process took place over four months (September–December), and was structured in four stages (Rovira, 2019): -phase I: Brainstorming; phase II: Composition; phase III: retouching; and phase IV: final sample-, in the context of the subject Body Expression. The required creative process consisted of an artistic–expressive performance that could draw on the creative resources explored in the Corporal Expression subject, such as mime, gestural coding, spatial coding, shadow theatre, and others. The montage had to be based on a message with a freely chosen theme (e.g., politics, education) and conveyed through all available expressive resources, while minimizing verbal expression.

In Phase I (Brainstorming), the members used this method of creative fluidity to propose different themes that could serve as the focus of the production. At the end of this phase, they selected one theme to develop. In Phase II (Composition), a script with a beginning, middle, and end was created to structure the production. The various creative roles—such as director, actors, sound technicians, and image technicians—were then assigned. In Phase III (Retouching), the production was videotaped and subsequently reviewed to identify possible defects, errors, and aspects in need of correction. Phase IV (Final Scene) consisted of performing the production for the class.

After collectiing the group reports, we applied Bardin's (2002) three phases: pre-analysis, use of the material and data processing and interpretation:

- a) In the pre-analysis phase, the category system created by Canales-Lacruz *et al.* (2021) was adapted. To do so, the group reports were read superficially, and a draft was proposed. After this, a pilot test was carried out on a randomly chosen sub-sample (30% of the sample).

Following the pilot test, a reliability pre-test was carried out by calculating the consensus between three independent coders, with 20% of the reports coded. Previously, the coders had undergone a four-hour training process to achieve maximum coding precision, accuracy and consistency. The three coders were highly experienced in content analysis. Fleiss' *kappa* was used to assess agreement, which was shown to be high ( $k=.910$ ).

- b) In the material used, all of the reports were coded in consensus with the research team. Firstly, the fragments to be coded were chosen and then dealt with one by one. A period of individual reflection was given, and afterwards, the choice of indicator and argument for making such a choice was set out. In the event no coincidence existed, a debate was undertaken based on the category system definitions.

- c) Data processing and interpretation were conducted using QSR-NVIVO 11 software, designed for research data analysis based on qualitative methods. This software ensured coding traceability by enabling the systematic organization and management of all coded references across the creative teams. It provided a clear audit trail, linking each data segment to its corresponding indicator and category. Reliability was established during the pre-analysis phase described above, through a concordance pre-test conducted with three independent researchers. NVivo 11 was not used in this reliability procedure. That is, to minimize interpretive biases regarding subjective concepts such as illumination or compensation for lack of fluency, training was conducted prior to the pre-test to reach agreement on the definition and boundaries of each indicator in the category system, thereby ensuring their exclusivity.

Ethical considerations: A member of the research group was the subject's teacher and, therefore, the teacher-student influence must be taken into consideration. This relationship also involves a thorough knowledge of the creation process, facilitating the resolution of any problems that might crop up in the research (Elliot, 2000). The students who participated received information on the study's aims, gave their consent and took part voluntarily in the drafting of the report.

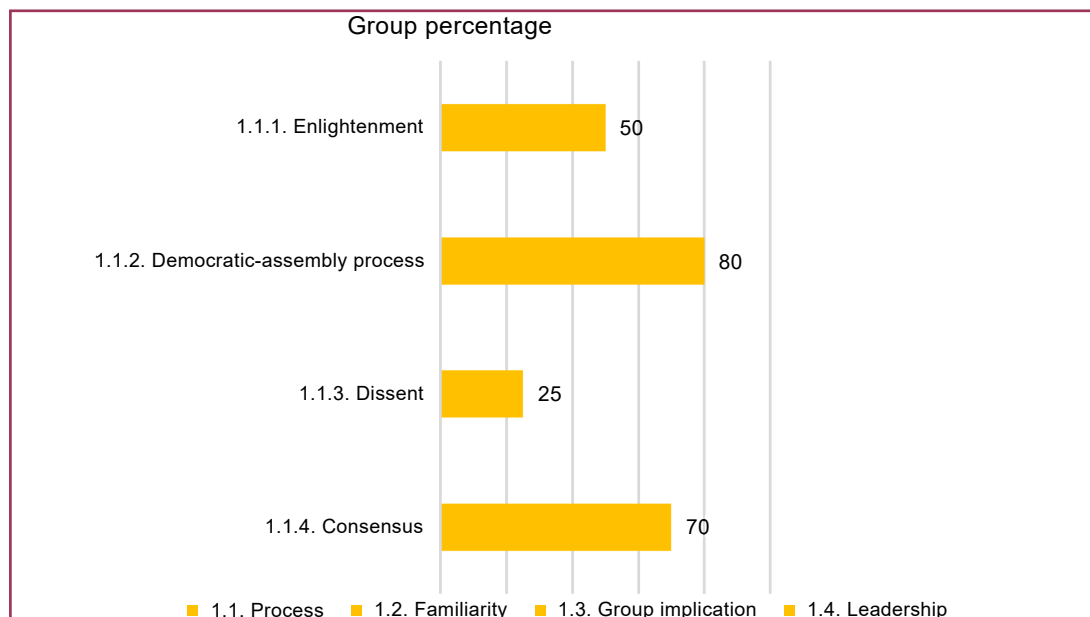
### 3 RESULTS

A total of 404 references drawn from the 20 creative teams were coded for analysis. Figure 1 outlines the percentage of groups that provided evidence in each of the indicators. More than 50% of the creative groups referenced five of the 8 indicators



analysed: 1.1.1 Enlightenment, 1.1.2 Democratic process through group discussion, 1.1.4 Consensus, 1.2.2 Group safety, and 1.3.1 Group commitment.

**Figure 1** - Percentage of groups by indicator



Source: Prepared by the authors

### 3.1 CHARACTERISTICS OF THE NEGOTIATION PROCESS IN GROUP CREATION

#### 3.1.1 Collective participation as a feature of the democratic process (indicator 1.1.2)

The indicator related to the discussion-based democratic process was the one mentioned by the largest number of groups (80%) and referenced the most (80 times). These statements revealed that the process used by the group for the negotiation was group discussion, in which all members participated to share their opinions. This mechanism was adopted intuitively by all creative teams, as the guidelines for the creative phases did not include any protocols for group decision-making.

In Figure 2, the content units of this indicator are outlined, featuring two main sections: the evaluation of the discussion-based democratic process and the evaluation of the creation process.

In the former, that is, the evaluation of the discussion-based democratic process, the references that describe the negotiation process in group decision-making have been incorporated. Additionally, four sub-units which specify the content are identified.

The first of these is “collective participation.” This is the most frequently referenced sub-unit, with 27 references out of the 58 related to the indicator, accounting for 48% of the total. Collective participation refers to the decision-making process shared by all group members, whether in the generation of ideas, the selection of

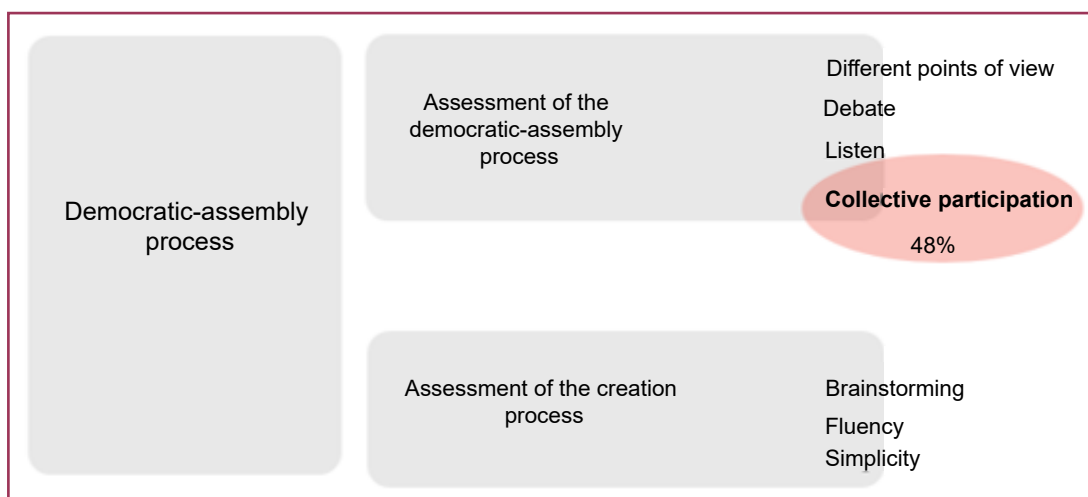
ideas, etc.: “Each group member proposed different topics and ideas, and in the end, we decided to go with this one” (A. in creative team 19).

The second sub-unit is “different points of view” and refers to statements that highlight the positive nature of group creation because it provides different perspectives of the same phenomenon: “A great experience, as we shared different opinions and points of view, bringing to the fore the creative aspects in each of us” (A. in creative team 11).

The third sub-unit is “debate.” In these statements, students described the incorporation of the debate in the decision-making process: “I think it has been a really interesting debate, in which we have been able to exchange different opinions and from there form our main idea” (S. in creative team 11).

The fourth sub-unit is “listening.” Here, the participants valued positively how, in the discussion-based democratic process, a scenario whereby everyone’s ideas were listened to was generated: “All of the members contributed ideas and felt that they were listened to” (P. in creative team 17).

**Figure 2** - Units of content of the democratic-assembly process -indicator 1.1.2



Source: Prepared by the authors

The second section for this indicator, that is, the evaluation of the creation process, incorporates the references that highlighted the group creation process positively. One of the most frequently mentioned aspects was the brainstorming proposal, an action pointed out in phase 1 of the creation process (Rovira, 2019), which began with free brainstorming to create as many ideas as possible. This was backed up by B. (creative team 9): “In this phase, we were a bit lost, as we couldn’t think of any ideas to put forward. But thanks to brainstorming, we were able to find some interesting topics which would lead us to one in particular [...]”

Fluidity was also one of the characteristics assessed: “It was a fairly easy phase in my opinion because the ideas just kept coming and everyone was contributing something, although it has to be said that some ideas were a little bit surreal” (E. in creative team 7).

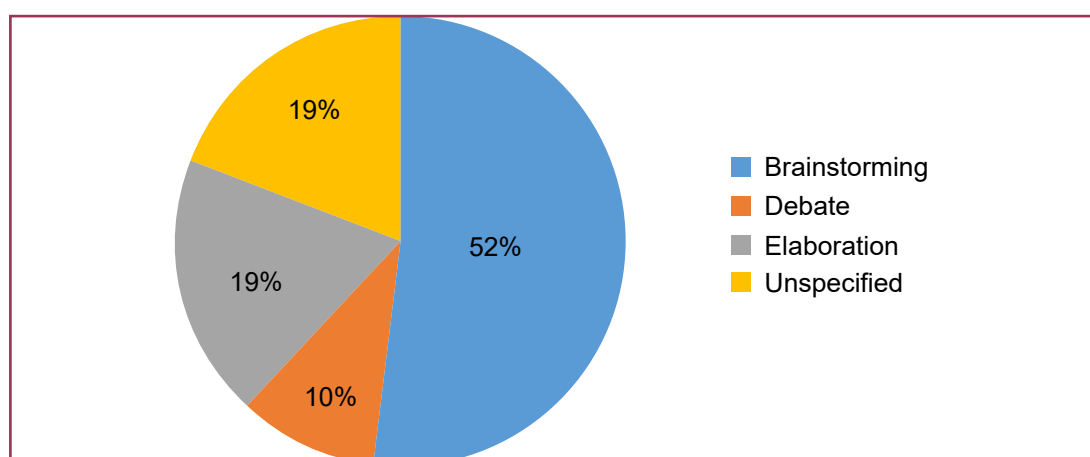


And lastly, the simplicity of the discussion-based democratic process: “When we began the first phase, it was all relatively simple. We came to an agreement really quickly” (M. in creative team 12).

### 3.1.2 Enlightenment as a mechanism used in decision-making during brainstorming (indicator 1.1.1)

This indicator was referenced by half of the groups – 50% – and received the third highest number of references in the category – 2.1. –. “Enlightenment” refers to the elucidation one of the ideas generated has provided to the group, enabling consensus to be reached immediately on the part of all of the members. More than half of the references – see Figure 3 – are to be found in brainstorming, a strategy introduced in phase one of the creation process, which, as has been reflected in the previous sub-section, was positively assessed: “The topic chosen was not very difficult, as once the idea emerged, it was something that we all wanted to do, because it was something that is being seen recently in the media and it seemed a very interesting proposal to us” (A. in team 20).

**Figure 3** - Timing of illumination - Indicator 1.1.1



Source: Prepared by the authors

### 3.1.3 Consensus as opposed to dissent – indicators 1.1.3 Dissent and 1.1.4 Consensus

“Consensus” was mentioned by 70% of the groups and “Dissent” by 25%. While “Dissent” has four references from two creative teams, “Consensus” has 27 references from 12 creative teams. Therefore, the limited presence of dissent is noteworthy.

The references from “Consensus” were organised in terms of the description that they contained on the degree of their complexity. 48% of the references described it as a simple process, 33% did not specify, and 19% considered it a complex process. For example, P. – team 10 – describes the simplicity as: “We all came to an agreement very quickly, as we shared many of the options that each of us put forward”.

“Dissent” appeared in one of the teams due to the proliferation of so many ideas that it was very complicated to choose just one of them: “At the beginning it was very hard because we had so many ideas” (P. in team 20).

### 3.2 FACTORS THAT FAVOURED COLLECTIVE NEGOTIATION

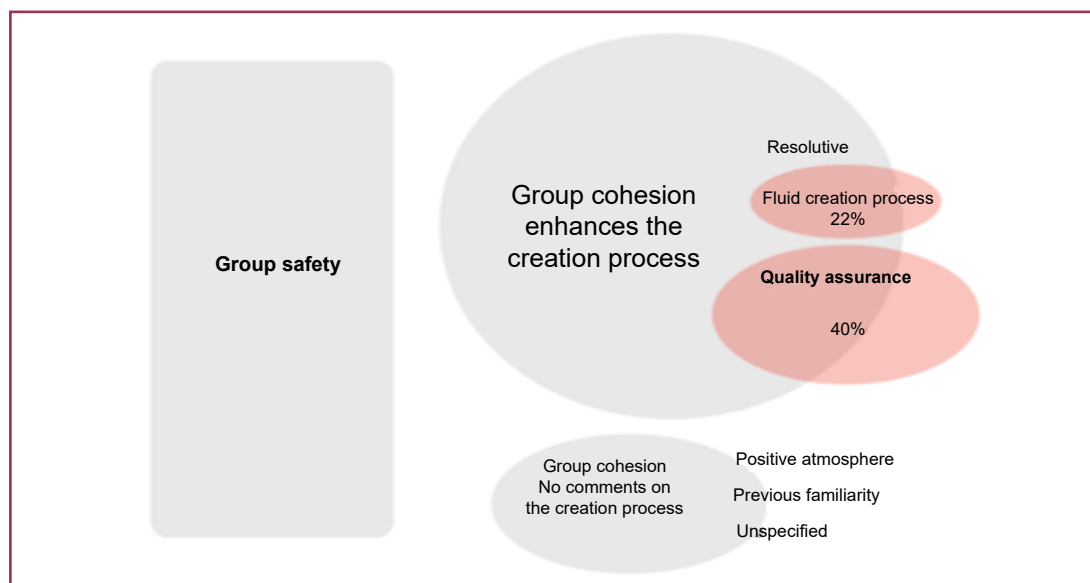
This section shows the results from the remaining categories: “Familiarity,” “Group Involvement”, and “Leadership.” All of the references included in these three categories mentioned that group cohesion, the high level of group commitment and the absence of leadership favoured collective negotiation and, therefore, facilitated an optimum group creation process.

#### 3.2.1 Group cohesion improves group production (category 1.2. Familiarity)

This category includes the statements that mention the sense of confidence in fellow group members.

Within the “Compensation for lack of fluidity” indicator, the statements that referred to the support of the group for individual initiatives were analysed, thus facilitating the fluidity of ideas. This indicator was mentioned by four groups (20%) and accounted for a total of seven references. All of them coincided in reflecting that the group compensated for the lack of individual fluidity which appeared throughout the creation process: “At the beginning I was a bit lost because I didn’t understand the topics they were proposing, but the group explained them to me and everything worked out really well” (S. in team 14).

The “Group Safety” indicator was mentioned by 13 groups – 65% – in a total of 36 references, with students referring to how the consolidation of the group made its members feel safe and protected. Figure 4 reflects two ideas taken from the statements. On the one hand, group cohesion is described as a factor that facilitates the group creation process (76% of the indicator’s references); and, on the other, group cohesion is described without mentioning the group creation process (24%). The difference in the size of the ellipses is determined by the coverage of each of them according to the total number of references in the indicator.

**Figure 4** - Units of group security content - indicator 1.2.2

Source: Prepared by the authors.

The arguments sustaining that group cohesion improved the creation process were specified in mentions regarding the quality contributed by the group — 40% of the indicator total, shaded in red in Figure 5. This content unit pointed out that group work ensured the quality of the product, thereby leading to group bonding and understanding: “[...] as we’re a group that works very well together, in class we were able to perform all sorts of tasks really well” (O. in team 2).

The second content unit with the highest coverage — 22%, and shaded in the Figure —, referred to the statement that group cohesion provided a fluid creation process: “The second phase went along the lines of the first, as the group’s cohesion was good, key ideas that we were all interested in and liked were set out” (P. in group 13). Group cohesion provided solution-seeking capabilities in the face of problems and situations where this was required: “The group was extremely cohesive and when something needed to be changed, we were always able to come up with a solution” (E. in team 15).

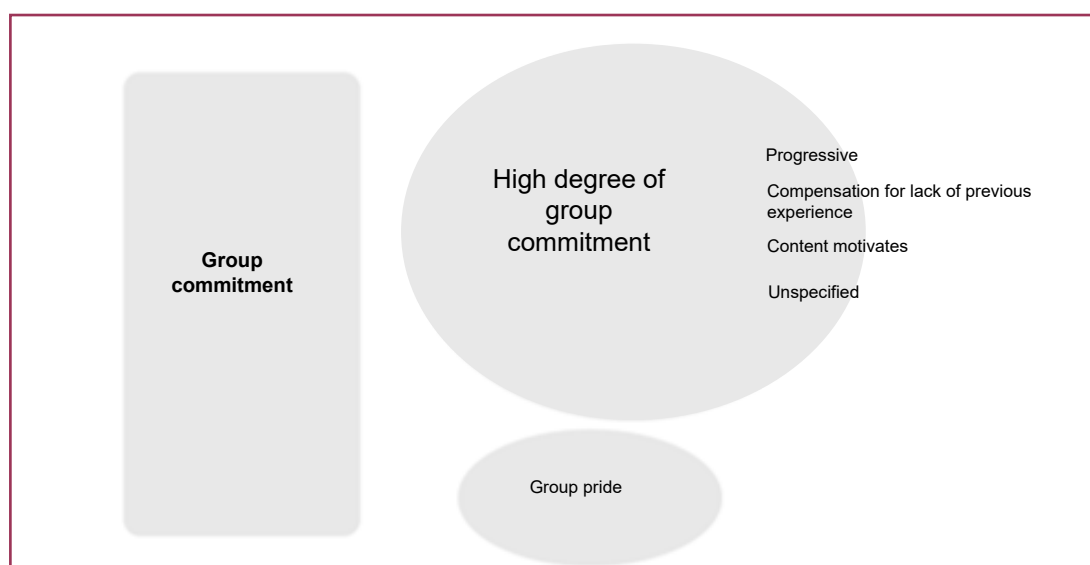
The second idea that appeared in the statements corresponding to the “Group safety” indicator also referred to group cohesion, but without mentioning the creation process (24%). The content units associated with a positive environment were those that had the highest number of references: “And this gave me a sense of satisfaction because we were working in a friendly environment, which meant that there was great harmony in the group” (G. in team 4).

### 3.2.2 High level of commitment to the group (indicator 1.3.1)

The “Commitment to the group” indicator appeared in statements from 11 creative teams (55% of the sample), with 44 relevant references. 70% of the references mentioned the high degree of group commitment, while the remaining references described the group pride derived from the group creation process. Figure 5 shows the coverage of both ideas in terms of the size of the ellipses.

Some of the comments describe the high level of group commitment: “I enjoyed working with this group because I knew them from class and got on well with them, but had never coincided with them on a group project, and they were very involved” (N. in team 21). One creative team alludes to how this commitment was progressive throughout the creation process: “[...] I was surprised at how keen and interested we all were in carrying out the task, because at the beginning it wasn’t really evident, but grew as time went on” (U. in team 14). This same creative team described the compensation obtained from the high level of commitment despite the group’s lack of experience in acting in front of the class group: “I can see a slight difficulty in the staging due to the lack of prior experience in the group, but they are committed and my perception is that everything will work out really well for us” (T. in team 14). And, lastly, this same creative team establishes that one of the reasons for the high level of involvement was the choice of topic, which was highly motivational for all of the group members.

**Figure 5** - Units of content of group commitment - indicator 1.3.1



Source: Prepared by the authors

On the other hand, group pride resulted in the feeling of satisfaction with the goals achieved in the group creation process. For example, team 3 affirms: “[...] we are very proud of the work we have done, because it shows great teamwork and now we know that by working together as a team, tasks are easier”.

### 3.2.3 The scant presence of leadership (indicator 1.4.1)

Only two creative teams – 1 and 14 – described the presence of an occasional leader associated with the composition and rehearsal of the choreographies that made up the group production: “Through the videos that we have been putting together during all of the rehearsals, J. would edit some parts that needed to be improved and so there wouldn’t be any mistakes in the final artistic expressive performance” (O. in team 1).

## 4 DISCUSSION

The group creation processes analysed in this research study facilitated continuous collective negotiation, giving rise to a pedagogical conflict scenario within this context. This offered future teachers an opportunity to develop the social skills necessary in a new, globalised socialisation (Molina, 2005) and the competence to work in collaboration with other professionals in the school (España, 2015a).

The results revealed that collective, discussion-based and democratic participation were characteristic and intuitive features in the students' negotiation process. The statements gathered in this study highlight the group creation process positively, characterised by its fluidity and simplicity. This positive association with performance aligns with the findings of Turner (2016), who noted that the presence of task-centred conflicts and the absence of relationship or process-based conflicts placed students in a constructive conflict scenario, which is positively linked to the group's performance.

Students emphasised the contrast of opinions, building on others' ideas, and debate as advantages of the process. This positive consideration is also in line with previous studies that reveal how a dialogue-based exploration of ideas is necessary for a generative discourse (Lefstein *et al.*, 2020; Wallen; Tormey, 2019).

In line with the type of work, the students who participated said that group work favoured creative processes, which confirms the results of previous research studies (Canales-Lacruz; Rovira, 2021; Canales-Lacruz; González-Palomares; Rovira, 2020; Canales-Lacruz *et al.*, 2021; Canales-Lacruz *et al.*, 2024). The interaction that arose from the creation process was consistent with research that showed how important it was for creativity tasks to be associated with the complexity and diversity that characterises social interaction (Fischer; Oget; Cavalluci, 2016). It is necessary to adopt multiple perspective approaches to free individuals from an egocentric view of the world. This is what Glăveanu (2015) understands *We-Paradigm* to be. People's different perspectives, which contribute to wealth and ambiguity and, consequently, stimulate the learning processes (Ahn; Sutherland; Bednareck, 2010). Collaborative work has compensated for the lack of artistic expressive experience in Physical Education students (Glăveanu, 2005; Leach; Stevens, 2020), which usually causes fear and insecurity as opposed to creativity (Lafuente; Hortigüela, 2021).

No statements referring to experiences of marginalisation or exclusion from the negotiation process were revealed in this study. The accounts reflect the positive group environment and bonding. Research on the collaborative learning of working teachers also notes how the inclusion and equality of all group members foster dialogue. In contrast, when participation is hierarchical or exclusive, collective engagement tends to decrease (Lefstein *et al.*, 2020).

In this regard, it is noteworthy that the sample consisted predominantly of men, an uncommon occurrence in dance and body expression contexts that are traditionally feminized. The literature on physical education and masculinities (Beltrán-Carrillo; Devís-Devís, 2019) indicates that male hegemony in this field is

often linked to discourses of performance, healthism, and body stereotypes, which can foster resistance to expressive and creative practices. Nevertheless, the findings of this study reveal that, despite the male predominance, democratic, consensual, and collaborative processes were promoted, with no evidence of relational conflicts or experiences of exclusion. This suggests that, in a creative and cooperative work context, the norms of hegemonic masculinity can be rendered more flexible, fostering spaces for equitable participation and openness to a diversity of ideas, thereby enriching both artistic production and the development of socio-emotional competences in future teachers.

The scarce mentions of leadership were precisely another of the results this research revealed. Leadership was not shown to be an essential element for negotiation. However, this piece of information is not consistent with the participant observation of the teacher, where leadership was detected in some of the creative groups, which makes it surprising that it was not mentioned in the group reports. On the one hand, in several groups, the assistance provided by a leader favoured the commitment to the work and allowed them to limit the small motivational challenges they faced as the creation progressed (Koivuniemi; Järvenoja; Järvelä, 2018). On the other hand, thanks to this leadership, some groups were able to improve the complexity of their group decisions, as is shown in the studies by Bixter and Luhmann (2020), Egan *et al.*, (2022), Henningsen *et al.*, (2004) and Wallen with Tormey (2019). The fact that the work groups were created freely by the students may also have played a facilitating role, insofar as the harmony of the group was concerned. This organisational factor ought to be taken into consideration in future interventions, given that negotiation contexts require the competency of working with non-selected groups. These results are more consistent with Metcalf *et al.* (2007), who emphasise that in order to achieve an integrative negotiation, trust and friendship among the members of the work teams should be fomented.

Consensus was another of the predominant characteristics of the collective creation process. This coincides with similar research studies focused on the social interaction triggered during group creation processes (Canales-Lacruz; Rovira, 2021; Canales-Lacruz; González-Palomares; Rovira, 2020; Canales-Lacruz *et al.*, 2021; Canales-Lacruz *et al.*, 2024). The limited references found in this research on dissent are consistent with the absence of the so-called “relationship conflicts” (Turner, 2016). These conflicts are negatively linked to group performance. The statements regarding dissent gathered in this study were based on the negative feeling generated when members felt they were not listened to and, therefore, they felt isolated in the group decision-making process. The review carried out by Lefstein *et al.* (2020) found different studies that showed how the marginalisation of some participants in the teachers’ collaborative work groups was harmful, not only for the marginalised members but for the group as a whole.

Another notable feature of the collective negotiation process was enlightenment as an immediate consensus mechanism, in which some of the ideas raised in Phase I Brainstorming proved so fascinating to all of the group members that they were adopted immediately and without debate or discussion. In this way, the importance of



introducing the brainstorming tool in the collective participation structure to facilitate creative processes can be confirmed (Canales-Lacruz; González-Palomares; Rovira, 2020; Canales-Lacruz *et al.*, 2021), fostering the fluidity of ideas that enables dialogue when faced with different perspectives and ways of proceeding.

The second thematic area of the results of this research study focused on the factors that favoured collective negotiation. Previous research on collaborative work groups involving working teachers (Lefstein *et al.*, 2020) and trainee teachers (Koivuniemi; Järvenoja; Järvelä, 2018) has emphasised that emotional support and a strong team spirit are crucial for them to feel protected and respected, leading to a diversity of ideas and, active listening (Miranda; Goñi; Hilliger, 2021). In addition to group cohesion, the commitment of the members to the project is another factor that facilitates collective negotiation. This process was experienced gradually and allowed members to compensate for the lack of previous experience in the creative field. These results are corroborated by the high degree of commitment analysed in research on group production (Canales-Lacruz; González-Palomares; Rovira, 2020; Canales-Lacruz *et al.*, 2021; Giguere, 2021). In the same way that group bonding generates work environments conducive to listening and respect, a high degree of commitment leads to a divergence of responses that trigger tolerance of ambiguity and diversity (Giguere, 2021).

## 5 CONCLUSIONS

The results of this research have enabled us to identify perceptions on the collective negotiation that occurs in a group creation process within the university context. These perceptions showed a positive evaluation of the collective negotiation within collaborative work processes and an intuitive predisposition towards the democratic management of negotiation.

- a) A tendency towards consensus and the prompt acceptance of the ideas of the group was observed. Brainstorming was perceived as playing a facilitating role in the early stages of creation processes;
- b) group cohesion enabled a process of fluid creation and was considered essential to ensuring production quality;
- c) the high degree of group commitment facilitated bonding and benefited the group creation process. Leadership was not considered to be an essential factor for negotiation processes to work well.

These results reveal the mechanisms that facilitate teamwork and, as such, enable the design of action protocols to expedite decision-making processes. For example:

- a) Establish the group formation strategy (by affinity, imposed, random) and explain to students the pedagogical implications of each option in the collaborative work process. In this way, the students' proactivity in resolving possible relationship conflicts deriving from the group configuration is encouraged;

- d) Clearly define the work phases that have to be followed, including strategies such as brainstorming to facilitate the initial stages;
- e) Incorporate individual contributions and reflections in the activity reports to encourage the effective bonding of the group as a whole.

These results should be accepted with caution, given that they correspond to a case study, limited to specific contextual variables which cannot be extrapolated to different situations. Another limitation of this study is that data were collected through group reports, which were sometimes confusing and contradictory. Furthermore, these reports did not reflect personal impressions on an individualised basis. In order to compensate for these deficiencies, discussion groups or follow-up interviews could have been used to clarify certain informational gaps.

## REFERENCES

- AHN, Mark J.; SUTHERLAND, Kathryn; BEDNAREK, Rebecca. Negotiating, power and strategic competition: a teaching case. **Education + Training**, v. 52, n. 4, p. 321-339, 2010. DOI: <https://doi.org/10.1108/00400911011050981>
- BARDIN, Laurence. **Content analysis**. Madrid: Akal, 2002.
- BELTRÁN-CARRILLO, Vicente; DEVÍS-DEVÍS, José. Inactive student thinking on their negative experiences in Physical Education: discourses of performance, healthism and hegemonic masculinity. **RICYDE. Revista Internacional de Ciencias del Deporte**, v. 15, n. 55, p. 20-34, 2019. DOI: <https://doi.org/10.5232/ricyde2019.05502>
- BIXTER, Michael T.; LUHMANN, Christian. Delay discounting in dyads and small groups: group leadership, status information, and actor-partner interdependence. **Journal of Experimental Social Psychology**, v. 86, p. 1-10, 2020. DOI: <https://doi.org/10.1016/j.jesp.2019.103902>
- CANALES-LACRUZ, Inma; GONZÁLEZ-PALOMARES, Alba; ROVIRA, Glòria. El proceso de creación grupal en las actividades artístico-expresivas como escenario para la negociación y la resolución de conflictos. **Movimento**, v. 26, p.1-15, 2020. DOI: <https://doi.org/10.22456/1982-8918.105472>
- CANALES-LACRUZ, Inma; ROVIRA, Glòria. Social interaction and group work in corporal expression activities. **Research in Dance Education**, v. 21, n. 1, p.3-16, 2021. DOI: <https://doi.org/10.1080/14647893.2020.1808606>
- CANALES-LACRUZ, Inma *et al.* El funcionamiento asambleario como mecanismo de consenso en un proceso de creación grupal. **Retos**, v. 41, p. 335-344, 2021. Available at: [https://www.researchgate.net/publication/348407943\\_El\\_funcionamiento\\_asambleario\\_como\\_mecanismo\\_de\\_consenso\\_en\\_un\\_proceso\\_de\\_creacion\\_grupal](https://www.researchgate.net/publication/348407943_El_funcionamiento_asambleario_como_mecanismo_de_consenso_en_un_proceso_de_creacion_grupal). Accessed on: Jan. 20, 2025.
- CANALES-LACRUZ, Inma *et al.* Experiencia social de la creación grupal en una intervención físico-artística. **Movimento**, v. 30, p. 30016, ene./dic. 2024. DOI: <https://doi.org/10.22456/1982-8918.138195>
- EGAN, Cate A. *et al.* Physical activity leadership development through a physical education teacher education service-learning course. **Journal of Teaching in Physical Education**, v. 41, p. 1-11, 2022. DOI: <https://doi.org/10.1123/jtpe.2021-0212>
- ELLIOT, John. **Educational change through action-research**. Madrid: Morata, 2000.

ESPAÑA. Ministerio de Educación, Cultura y Deporte. **El profesorado del siglo XXI: XXI Encuentro de Consejos Escolares Autonómicos y del Estado**. Madrid: Secretaria General Técnica, 2015a. Available at: <https://www.educacionyfp.gob.es/dam/jcr:f88f1d40-af31-4fae-8c6b-fb5536f8ab71/21encuentroconsejosescolares2012-pdf.pdf>. Accessed on: Jan. 20, 2025.

ESPAÑA. Real Decreto 126/2014, de 28 de febrero, por el que se establece el currículo básico de la Educación Primaria. **BOE**, n. 52, p. 19349-19420, 1 marzo 2014. Available at: <https://www.boe.es/eli/es/rd/2014/02/28/126>. Accessed on: Jan. 20, 2025.

ESPAÑA. Real Decreto 1105/2014, de 26 de diciembre, por el que se establece el currículo básico de la Educación Secundaria Obligatoria y del Bachillerato. **BOE**, n. 3, de 03 enero 2015b. Available at: <https://www.boe.es/eli/es/rd/2014/12/26/1105/con>. Accessed on: Jan. 20, 2025.

FISCHER, Stéphanie; OGET, David; CAVALLUCI, Denis. The evaluation of creativity from the perspective of subject matter and training in higher education: issues, constraints and limitations. **Thinking Skills and Creativity**, v. 19, p. 123-135, 2016. DOI: <https://doi.org/10.1016/j.tsc.2015.10.002>

GIGUERE, Miriam. The social nature of cognition in dance: the impact of group interaction on dance education practices. **Journal of Dance Education**, v. 21, n. 3, p. 132-139, 2021. DOI: <https://doi.org/10.1080/15290824.2021.1928676>

GLĂVEANU, Vlad Petre. Creativity as a sociocultural act. **The Journal of Creative Behavior**, v. 49, n. 3, p. 165-180, 2015. DOI: <https://doi.org/10.1002/jocb.94>

HANNA, Judith Lynne. A nonverbal language for imagining and learning: dance education in K-12 curriculum. **Educational Researcher**, v. 37, n. 8, p. 491- 506, 2008. DOI: <https://doi.org/10.3102/0013189X08326032>

HENNINGSEN, David Dryden *et al.* It's good to be leader: the influence of randomly and systematically selected leaders on decision-making groups. **Group Dynamics: theory, research, and practice**, v. 8, n. 1, p. 62-76, 2004. DOI: <https://doi.org/10.1037/1089-2699.8.1.62>

KOIVUNIEMI, Marika; JÄRVENOJA, Hanna; JÄRVELÄ, Sanna. Teacher education students' strategic activities in challenging collaborative learning situations. **Learning, Culture and Social Interaction**, v. 19, p. 109-123, 2018. DOI: <https://doi.org/10.1016/j.lcsi.2018.05.002>

LAFUENTE, Jorge Carlos; HORTIGÜELA, David. The perception of future teachers about implementation of teaching content on bodily expression. **Movimento**, v. 27, p. 1-17, 2021. DOI: <https://doi.org/10.22456/1982-8918.111735>

LEACH, James; STEVENS, Catherine J. Relational creativity and improvisation in contemporary dance. **Interdisciplinary Science Reviews**, v. 45, n. 1, p. 1-22, 2020. DOI: <https://doi.org/10.1080/03080188.2020.1712541>

LEFSTEIN, Adam *et al.* Taking stock of research on teacher collaborative discourse: Theory and method in a nascent field. **Teaching and Teacher Education**, v. 88, 2020. DOI: <https://doi.org/10.1016/j.tate.2019.102954>

METCALF, Lynn E. *et al.* Cultural influences in negotiations: a four country comparative analysis. **International Journal of Cross Cultural Management**, v. 7, n. 2, p. 147-168, 2007. DOI: <https://doi.org/10.1177/1470595807079380>

MIRANDA, Constanza; GOÑI, Julian; HILLIGER, Isabel. Orchestrating conflict in teams with the use of boundary objects and trading zones in innovation-driven engineering design projects. **International Journal of Technology and Design Education**, v. 31, p. 339-355, 2021. DOI: <https://doi.org/10.1007/s10798-019-09552-2>

MOLINA, Fidel. Nuevos conflictos sociales y su presencia educativa. Análisis sociológico y reflexiones para la intervención. **Culture and Education**, v. 17, n. 3, p. 17-28, 2005. DOI: <https://doi.org/10.1174/113564005774462618>

ROVIRA, Glòria. **Dance and corporal expression**. Barcelona: Bradu, 2019.

TURNER, John R. Team cognition conflict: a conceptual review identifying cognition conflict as a new team conflict construct. **Performance Improvement Quarterly**, v. 29, n. 2, p. 145-167, 2016. DOI: <https://doi.org/10.1002/piq.21219>

WALLEN, Matthew; TORMEY, Roland. Developing teacher agency through dialogue. **Teaching and Teacher Education**, v. 82, p. 129–139, 2019. DOI: <https://doi.org/10.1016/j.tate.2019.03.014>

**Resumo:** O objetivo foi analisar a negociação coletiva nos processos de criação em grupos. Participaram alunos da disciplina de Expressão Corporal do curso de Licenciatura em Ciências da Atividade Física e do Esporte da Universidade Pontifícia de Salamanca (Espanha). As experiências foram coletadas por meio de um relatório de grupo. Foi utilizada a análise de conteúdo e o programa QSR-NVIVO 11. Os resultados revelaram uma predisposição intuitiva para a gestão democrática e uma valorização positiva do contraste de opiniões. Houve uma tendência ao consenso e à aceitação precoce de ideias “esclarecidas”. O brainstorming foi identificado como um mecanismo de facilitação. A coesão e o comprometimento do grupo foram vistos como aspectos altamente positivos. A liderança não surgiu como um fator essencial para o bom andamento do processo. Todos esses elementos favoreceram a criatividade e compensaram a falta de experiência artística e expressiva dos alunos.

**Palavras-chave:** Práticas Interdisciplinares. Negociação Coletiva. Criatividade. Capacitação de Professores.

**Resumen:** El objetivo fue analizar la negociación colectiva en los procesos de creación grupal. Participaron estudiantes de la asignatura de Expresión Corporal del Grado en Ciencias de la Actividad Física y del Deporte de la Universidad Pontificia de Salamanca (España). La recogida de las experiencias se realizó a través de un informe grupal. Se utilizó el análisis de contenido y el programa QSR-NVIVO 11. Los resultados revelaron una predisposición intuitiva a la gestión democrática y una valoración positiva del contraste de opiniones. Se manifestó una tendencia al consenso y a la aceptación temprana de las ideas surgidas por “iluminación”. El *brainstorming* se identificó como un mecanismo facilitador. La cohesión grupal y el compromiso fueron considerados aspectos altamente positivos. El liderazgo no se reveló como un factor esencial para el buen funcionamiento del proceso. Todos estos elementos favorecieron la creatividad y compensaron la falta de experiencia artístico-expresiva del alumnado.

**Palabras clave:** Prácticas Interdisciplinarias. Negociación Colectiva. Creatividad. Formación del Profesorado.

## USE LICENSE

This article is published as Open Access under the Creative Commons Attribution 4.0 International (CC BY 4.0) license, which allows its use, distribution and reproduction in any medium as long as the original work is properly cited. More information at: <http://creativecommons.org/licenses/by/4.0>

## CONFLICT OF INTERESTS

The authors declare that this work involves no conflict of interest.

## AUTHOR CONTRIBUTIONS

**Alba González-Palomares:** Data curation, formal analysis, research, methodology, visualization, original writing, review, and editing.

**Inma Canales-Lacruz:** Formal analysis, research, methodology, software, visualization, original writing, review, and editing.

**Ana Rey-Cao:** Conceptualization, formal analysis, research, visualization, original writing, review, and editing.

## FUNDING

This study was not supported by funding sources.

## RESEARCH ETHICS

This research project followed the Universidade Federal do Rio Grande do Sul Scientific Research Integrity Guide

## RESEARCH DATA AVAILABILITY

Research data is only available upon request.

## HOW TO CITE

GONZÁLEZ-PALOMARES, Alba; CANALES-LACRUZ, Inma; REY-CAO, Ana. Collaborative problem-solving in group-based creation processes of pre-service Physical Education teachers. **Movimento**, v. 31, p. e31051, Jan./Dec. 2025. DOI: <https://doi.org/10.22456/1982-8918.145786>

## EDITORIAL RESPONSIBILITY

 Alex Branco Fraga\*

 Elisandro Schultz Wittizorecki\*

 Mauro Myskiw\*

 Raquel da Silveira\*

\* Universidade Federal do Rio Grande do Sul, Escola de Educação Física, Fisioterapia e Dança, Porto Alegre, RS, Brazil.