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ORIGINAL

IMPLEMENTATION AND EVALUATION OF A COLLABORATIVE GYMNASTIC STRATEGY

IMPLEMENTACIÓN Y EVALUACIÓN DE UNA ESTRATEGIA GIMNÁSTICA COLABORATIVA

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ABSTRACT

The learning of gymnastic skills lacks sufficient research that focuses on strategies that can contribute to the development of these skills in a collaborative way. This study analyses the perceptions of Secondary Education students and their physical education teachers on the implementation of a collaborative strategy for learning of gymnastic in the educational context. A qualitative methodology has been used to analyse and categorize the reflections of the participants. The results show that the students and the physical education teachers perceive improvements in the gymnastic competences, in their relation with the group, in their capacity of decision-making and in their degree of satisfaction with the implementation of the collaborative strategy

KEY WORDS: physical education, methodology, gymnastic skills

RESUMEN

El aprendizaje de las habilidades gimnásticas carece de investigaciones suficientes que se centren en estrategias que puedan contribuir a un desarrollo de estas habilidades de forma colaborativa. Este estudio analiza las

percepciones de un grupo de estudiantes de Bachillerato y del profesorado de educación física sobre la implementación de una estrategia colaborativa para el aprendizaje gimnástico en el contexto educativo. Se ha utilizado una metodología cualitativa que ha permitido analizar y categorizar las reflexiones de los participantes. Los resultados muestran que los estudiantes y el profesorado de educación física perciben mejoras en las competencias gimnásticas, en su relación con el grupo, en su capacidad de toma de decisiones y en su grado de satisfacción con la implementación de la estrategia colaborativa.

PALABRAS CLAVE: educación física, metodología, habilidades gimnásticas

1. INTRODUCTION

Current perspectives on learning in the international educational community underline the relevance of the social and situated construction of learning (Lave & Wenger, 1991; Sfard, 1998), coining the expression *learning in community of practice* (Darling-Hammond, 1996; Wenger, 1998). All these theories allude to the participation, and to make contrast with the traditional idea of learning that emphasises the acquisition and reproduction of knowledge. The metaphor of participation highlights that the learning of skills and strategies are transferred better when they are learned in the context of application and in a collaborative way (Glazer & Hannafin, 2006), this is especially relevant for learning sports and for learning of gymnastic.

The complexity of education demands the construction of a diversity of perspectives; nevertheless, we are inclined towards a perspective where learning emerges from the group's social practices as opposed to the previous conception focused on the teacher's action. Additionally, the learning environment and context must be *authentic* (Lave & Wenger, 1991), which means that students work in real and everyday environments, which is the basis of the identity of the situated learning.

In the field of sports and physical activity, the social and situated construction of learning has been recognised in the Handbook of Physical Education (Kirk, Macdonald, & O'Sullivan, 2006), which establishes the perspectives of the field (Rovegno, 2006; Rovegno & Dolly, 2006), and in several publications. For example, Kirk and Kinchin (2003) support learning as a model for sports education, due to its ability to apply and transfer its theory-practice by offering authentic learning experiences. Goodyear and Casey (2015) explain the different models of learning in physical activity, underlining the model of community of practice (Casey & MacPhail, 2018). The *Routledge Handbook of Physical Education Pedagogies* (Ennis, 2012) also broadens and discusses the theory and its implications for the professional practice of Physical Education (PE).

In the area of gymnastics, research has been undertaken within the framework of these perspectives. For example, Bähr (2010) shows his commitment to cooperative learning in gymnastics obtaining empirical results, while O'Leary

and Griggs (2010) support cooperative models to promote the gymnastic skills learning; Bayraktar (2011) enlightens the cooperative perspective in contrast to the traditional methodologies focused on the teacher. In the field of PE, authors tend to use the term cooperation in a similar way to how the concept of collaboration is used in other fields of study (Dyson & Casey, 2012, 2016). Therefore, it can be said that the word cooperation has prevailed in PE conceptually undifferentiated from the term *collaboration*, and is used to refer to autonomous work methodologies focused on the student, a concept partly resulting from the orientations of the European Convergence process (Bologna, 1999).

Research in the social and situated perspective can be said to fall into the category of innovations, since although cooperative and collaborative methodologies have existed in traditional teaching, social and participatory learning currently introduces new traits as a greater concern for the comprehensive learning and for the application of theory in practice. Casey and Goodyear (2015), in a review of researches on physical, cognitive, emotional and social learning skills, propose a pedagogical model based on interaction and construction of interpersonal skills. Goodyear, Casey and Kirk (2014) identify their cooperative methodology as a pedagogical model focused on the student, participation, and aimed at integrating multiple domains. Chanal, Marsh, Sarrazin and Bois (2005) seek through cooperation an improvement of self-concept and self-identity in gymnastics, and Goodyear and Casey (2015) develop the concept of *learning community* as a model of innovation for change. Other authors, such as Fernández-Río, Sanz, Fernández-Cando and Santos (2017), in the field of gymnastics and sports (Chun-Chieh, 2019), defend the new social perspectives. Finally, authors like Wright (2006) and Wrench and Garrett (2012) epistemologically back up the new perspectives.

It is our intention to make a small contribution in this line since this conceptual framework considers that the collaborative work reinforces learning because it creates knowledge among the group through the interrelations of its members. Quoting Goodyear, Casey and Kirk (2014) and Bayraktar (2011), we agree that this type of learning strenghtens the skills of the participants, improves their aptitudes and increases their satisfaction with the learning made in gymnastics. Similar to the aforementioned research, Fernández-Río and Méndez-Giménez (2012), and Chow, Cheung and Ng (2008) use support and peer evaluation in gymnastic skills, finding benefits in learning. O'Leary and Griggs (2010) work the gymnastics from a comprehensive approach to learning: psychomotor objectives, attitudes, aptitudes, feelings and social strategies.

Many variables are involved in the PE classroom, none of which, on its own, produces a clear improvement, but in our research we have tried to include in this collaborative strategy an organisation of the learning environment that promotes participation, mutual support, and shared goals and decision making to provide students with a sense of commitment, responsibility and autonomy. However, we agree with Rovegno (2008) that taking into account the complexity of learning environments, there is still a lot of research to be carried out.

1.1. Research our own practice in educational gymnastics

The development of gymnastic skills, for their ability to contribute to a healthy life (Pajek, Čuk, Kovač, & Jakše, 2010), are part of the general contents and curricular skills related to the movement in the official curricula of Secondary Education in many countries, to a greater or lesser extent. Researches on the educational opportunities offered by these learnings highlight the psychosocial benefits (Dowdell, 2013), cognitive benefits (López & Postigo, 2012) and physical development (Burt, Ducher, Naughton, Courteix, & Greene, 2013). Numerous researches (Culjak, Miletic, Kalinski, Kezic, & Zuvella, 2014; Fallah, Nourbakhsh, & Bagherly, 2015; García, Barela, Viana, & Barela, 2011) confirm that participation in gymnastics programmes also improves the creative and expressive competence of students. In this regard, the study by Ávalos, Martínez and Merma (2015) highlights the favourable opinions of PE teachers about the potential of these skills for both control and personal confidence and to promote social arrangements for collaboration and cooperation.

Although the contributions and benefits of gymnastics as physical activity have been researched, studies on gymnastic teaching styles such as direct instruction or the inquiry, the analytical or global method, together with different types of feedback have been slowly researched (Vernetta, Gutiérrez, & López-Bedoya, 2015). The most used methodologies for the teaching of gymnastic content in the educational context have been quite conventional (Bortoleto, 2012; Fernández-Río & Méndez-Giménez, 2012). However, researches have also been carried out introducing playful elements and strategies adjusted to the needs of the students (Nunomura, Okade & Tsukamoto, 2009; O'Leary & Griggs, 2010). In short, strategies towards a more diverse and creative and integrated gymnastic practice. In this line, we have tried to reflect and investigate the practice.

The most innovative approaches to the methodology in the gymnastic field agree in the fostering of students' ability to learn for themselves, as well as in the teamwork, emphasising social values such as collaboration, participation and integration (Bähr, 2010; Fernández-Río & Méndez-Giménez, 2012; Vernetta, Gutiérrez, López-Bedoya, & Ariza, 2013). Llamas, Hellín and Moreno (2004) consider that those teaching styles which provide students with personal autonomy should be carried out, along with those which manage to involve them cognitively. Basically, in the educational scientific community, the methodological turning point is focused on the new learning perspectives (Kirk, 2010; López & Gea, 2010) and on the social and situated perspectives, as we have indicated at the beginning. In summary, three ways of change are widely acknowledged: the first towards strategies where each student learns at his/her own pace, with autonomy and freedom, self-regulating his/her process; the second towards more participatory methodologies, based on the perspectives of learning as a community of practice; and the third, towards strategies that coordinate motor learning with the rest of the competencies until reaching a more comprehensive learning based on social, emotional and cognitive aspects (Jolliffe, 2007; O'Leary & Griggs, 2010; Rink, 2005).

Several approaches combine the three types of objectives aforementioned. We specifically identify some examples. Educational research shows that one approach with effective results in all learning domains is the cooperative learning (see Dunn & Wilson, 1991; Dyson & Grineski, 2001; Jolliffe, 2007) where the emphasis is placed on the autonomy of the group to achieve a common goal (Jolliffe, 2007). The relevance of a very participatory learning where the group is involved in its own goals, has interdependence in their achievement (Velázquez, 2010), and responsibility in the shared effort (Fernández-Río & Méndez-Giménez, 2016; Jolliffe, 2007) delineate the strategies of the cooperative learning. Movement skills, inherent to this type of learning, are worked on through interpersonal skills in the cooperative tasks designed (Velázquez, 2012b), and the attitudes such as encouraging and respecting peers or learning to listen are vital to group coordination (Fernández-Río & Méndez-Giménez, 2016). Likewise, the self-assessment, where each group has to reflect on the process carried out, allows us to observe which actions they have performed correctly and which could be improved (Velázquez, 2012b), and helps students to make decisions in this regard (Fernández-Río & Méndez-Giménez, 2016) based on observation and reflection. In this line, cooperative strategies can help students obtain a more meaningful and more responsible learning within the gymnastic field, as stated in some studies where the organisation of the task is carried out through circuits or mini-circuits (Vermetta, López-Bedoya, & Delgado, 2009). In this regard, O'Leary and Griggs (2010) present a study where they use the Aronson Puzzle method for learning of gymnastic where psychomotor learning was not very effective, and yet the improvements in students in terms of cognitive, affective and individual and group responsibility level stand out. Despite this, there is not just one methodology since each school requires different responses from teachers, either because they are more agile or because they have more difficulty to do the task.

With the intention of contributing to research in the learning of gymnastic skills, this study aims to analyse the perceptions of high school students in terms of a *Collaborative gymnastics* strategy designed and implemented, as well as to analyse the perception of PE teachers concerning the strategy carried out. From this objective, the following research questions were posed:

1. What reflections and assessments concerning the learning practice itself emerge from students using an integrated and collaborative methodology?

1.1 What expectations, achievements and experiences emerge from the experiences of collaborative learning according to students?

1.2 Do students perceive differences with regard to the most directive and traditional methodologies previously used?

2. What assessment do teachers carry out regarding their own practice in the use of a comprehensive and collaborative methodology?

2. MATERIAL AND METHOD

The research has a qualitative approach and an emerging design. It is carried out based on purposive sampling. The participants are 74 students (42 women and 32 men) of 1st year of post-mandatory Secondary Education [Year 12 + 1 A levels] of an urban school. The methodological design consists of the application of a Teaching Unit (TU) for learning gymnastic competencies called *Collaborative gymnastics* composed of 16 sessions, lasting 50 minutes each one of them. The participating classes belonged to post-mandatory secondary education, and they carried out the study in the subject of PE.

The group collaboration as a basis for gymnastic teaching resembles the so-called *Gymnastics for all*, which is one of the most interesting gymnastic varieties for its application in the educational field (Bortoleto, 2012). This gymnastic modality is considered and accredited by the International Gymnastics Federation (2017). It is characterised for being performed as a team. Each team designs a choreographed scene, with musical support and free choice of accessories, seeking a variety of exercises directly or indirectly associated with any modality within the gymnastic classification. At all times, the process should be co-regulated within the group. As stated in Decree 87/2015 of the Valencian Community, gymnastic skills are present, for example, in the unit 2 (Games and sports), in the unit 4 (Body expression and communication) and in the unit 5 (Transversal elements) of the curriculum of PE in 1st year of post-mandatory secondary education. The gymnastic competence may favour students, not only in terms of their participation and resolution of the different specific motor actions, but also it may encourage continuous decision-making at the motor and cognitive level, as well as it develops collaborative attitudes, teamwork, communication and dialogue, all for the achievement of common goals. On the other hand, these skills, due to their expressive and communicative nature, may favour and stimulate creativity and entrepreneurship in students, as well as the responsibility for their own safety in practice, critical mind, and self-awareness, recognising their own weaknesses and strengths and those of the group. Therefore, the skills to be developed in the unit were:

Gymnastic competencies

- ✓ Ability to perform and introduce in the choreography the basic acrobatic skills (rolls performed forwards, backwards, vertical or sideways) by all members of the group.
- ✓ Ability to initiate more difficult acrobatic elements (side cartwheel, front cartwheel, round-off, headstand) by at least half of the group, being the element assisted by the classmates themselves.
- ✓ Ability to introduce in the scenography the different gymnastic particularities seen in the two previous academic years (acrosport, linking

elements, gymnastic elements, leaps, turns, acrobatics of different levels of execution).

Learning management competencies

- ✓ Ability to coordinate the choreography, reaching consensual decisions and a common vision of the design to be implemented.
- ✓ Ability to reflect and judge the process performed.

Social competencies

- ✓ Ability to participate and respect the contributions of classmates.

Participating students had previous experience in learning of gymnastic (3rd and 4th year of Compulsory Secondary Education [Year 10 and year 11]) where conventional learning strategies, such as direct command and homework assignments, were used for teaching them. In this case, they were offered an organisation protocol that aimed to create free groups of 4-6 students, who should come to a decision together concerning:

- 1.- A scenic theme.
- 2.- A musical theme (2'20").
- 3.- 4-6 acrosport figures.
- 4.- Acrobatics and linking elements which are free in number and type.
- 5.- Costumes and makeup.
- 6.- Record on video and edit.

Likewise, students should plan and distribute the design and decision-making sessions and the rehearsal sessions. Students are explained the guidelines and conditions to work in the first class session (length of the unit, work groups, distribution of class space, date of the choreographic performance, form and structure of the methodology to be used and the assessment criteria). The final performance date was established (last session of the TU). Finally, the students and the faculty had a post-task activity that consisted of completing the self-assessment of the entire process.

Instrument

The tool for the collection of student data was the semi-structured interview, which is valued as a very suitable and effective instrument for research of an educational and qualitative nature (Coulter & Smith, 2009). After collecting their informed consent, one of the researchers of this study proceeded to carry out

the interview. This one was conducted in a written and anonymous way, after the end of their last session of the TU of gymnastic and acrobatic skills in the same learning environment (gym) and lasted between 15 and 20 minutes. From the research questions, four open questions resulted:

- Have your expectations been met? Comment the reasons.
- What do you think you have really achieved in this teaching unit?
- Discuss what your feelings and experiences have been during the development of the unit and what positive aspects and what difficulties you would highlight.
- What differences have you found in the development of the TU of gymnastic skills compared to previous academic years?

On the other hand, the PE faculty was proposed to make a field log where all the daily observations of the process were captured.

Procedure

The research team held an arranged meeting with the school's management team to inform them about the research objectives. Likewise, parents were informed about the purposes of the investigation and their signed consent was obtained for their children to participate in the study. Students were also informed about the purposes of the study. Their participation was voluntary and they did not receive any compensation.

Once all the information was collected, it was transcribed into a Word document, after reading it several times in a reflective manner, an inductive analysis (Maykut & Morehouse, 1994) of the content of the interviews was carried out, establishing the first connections to establish the initial categorisations and codifications. Afterwards, the final inferential codes were created; validating them through a triangulation process where two university professors specialised in PE and two secondary school teachers specialists in Gymnastic and Acrobatic Skills participated. After this process, the final code map was created from which the main themes of this study emerge:

- Theme 1: Analysis of the implementation of the *Gymnastics in collaboration* unit, according to the students.
 - Theme 1.1. Expectations, achievements and learning experiences of students.
 - Theme 1.2: Students' perception of the strategy implemented in comparison with conventional methods.

Student responses were introduced in the software programme *Analysis of Qualitative Data 7* (Huber & Gürtler, 2015). The choice of this software is based

on its flexibility and its potential to make the different categories from the participants' own voices interact with the researcher's conceptualisation and structuring process when categorising. The software also complements the qualitative analysis with a quantification, which is why we present, in the results, the tables of codes with the absolute frequency (AF) and the percentage of absolute frequency (%AF).

The information collected by the PE faculty in their field log was analysed through a triangulation process, in which the same experts aforementioned participated. Hence the main conclusions gathered in the second theme of this research were drawn:

- Theme 2: Teachers self-assessment of their own practice.

3. RESULTS

The findings are grouped according to the emerging themes, and through different tables, the corresponding codes and their absolute frequencies (AF) are shown along with their percentage. Likewise, as a complement, different text fragments of the students' interviews reflecting the codes resulting from the analysis are presented.

Theme 1: Analysis of the implementation of the *Gymnastics in collaboration* unit, according to the students

Theme 1.1. Expectations, achievements and learning experiences of students

The statements concerning the fulfillment of the students' learning *expectations* (Table 1) indicate that there is a high presence of expressions evidencing their fulfillment (89.71%) because the objectives have been achieved at the end of the TU (68.22%) and, in many cases, thanks to the help of other classmates (21.49%):

They have been fulfilled to a great extent. Initially, I have felt fear and insecurity but as the months have gone by, despite the group and individual difficulties, I think things have improved and the effort and perseverance have surfaced (Student_03).

They have been fulfilled by far, it seemed very fun and enriching. I had a great time with my classmates and I learned a lot thanks to them (Student_32).

Yes, they have been met because my classmates have been helping me with the difficulties I was having (Student_31).

A lower percentage of expressions indicate that students have not met their learning expectations (10.28%) since better results were expected at the end of the study (6.54%):

Only in part. I had high expectations regarding this work and due to several factors, the great majority has not been met (Student_53).

In some isolated cases, their learning preferences were inclined to individual activities (3.73%):

They have not been fully fulfilled, I would rather do other more individual activities and depend less on others (Student_10).

Table 1. Learning expectations of the TU Gymnastics in Collaboration, through collaborative strategies

Codes	AF	%AF
Fulfilled:	96	89.71%
Thanks to the achievements	73	68.22%
Thanks to the team help	23	21.49%
Not fulfilled:	11	10.28%
Expectations of better results	7	6.54%
Preference for individual works	4	3.73%
TOTAL	107	

AF, absolute frequency; %AF, percentage of absolute frequency. Own source

As for the *achievements* and acquisitions throughout the development of the TU (Table 2), participants positively perceive achievements in psychomotor skills inherent to gymnastics. In other words, they have perceived improvements in their gymnastic competence (45.40 %), in their affective-social competence (41.32%) indicating, for example, that they have learned to work in teams and they have improved their cognitive competence (13.26%), as in the decision-making, the contribution of ideas, conflict resolution and critical and reflective thinking about their own learning. Here are some excerpts from the interviews that refer to these encodings:

I have learned to balance with three points, although in the final composition I did not do it and I have managed to improve and perfect the acrobatics I learned last year (Student_64).

I have been practising rhythmic gymnastics from a very early age and it is something that I am not bad at. With this work I have fulfilled my achievements of being useful, helping and contributing to everything that I could. Especially I have helped those classmates with the greatest difficulties (Student_67).

I have been able to work together with six people totally different from me. We have managed to agree on the vast majority of things (Student_20).

Table 2. Perception of achievements and skills acquired, according to students

Codes	AF	%AF
Improve gymnastic competence	89	45.40%
Improve affective-social competence	81	41.32%

Improve cognitive competence	26	13.26%
TOTAL	196	

AF, absolute frequency; %AF, percentage of absolute frequency. Own source

As for the *experiences* lived by the students and the causes that motivate them (Table 3), we noticed satisfactory experiences (74%) and unsatisfactory experiences (26%).

On the one hand, the reasons related to the feeling of satisfaction are the feelings of joy, pride and confidence (54.50%), overcoming challenges, fear and losing the initial shame (13.50%) and the desire to continue practicing with this strategy (6%). This is shown in the following excerpts of the interviews:

Happiness and pride because thanks to my team and their contributions, we have managed to create something together and very satisfied because it also went as we wanted (Student_51).

I have surpassed myself, I have managed to do acrobatics that I had never dared to try before (Student_22).

I have been able to lose my fear and also I was less ashamed to do things that I previously could not do because of my lack of trust (Student_26).

I am very sorry because it is a strategy that I love and the people with whom I have shared this work are great and I am sorry that it does not last longer (Student_64).

On the other hand, the causes of dissatisfaction are mainly related to pressure and stress (18%) along with frustration and fear (8%) for not having achieved further improvement:

I am relieved, because it has been very stressful due to the dates, difficulties encountered and the nerves of performing it before so many classmates (Student_63).

I feel a little disappointed by the end of the work; there were many arguments and last minute changes (Student_66).

Table 3. Causes of satisfaction and dissatisfaction with collaborative learning

Codes	AF	%AF
Satisfaction:	148	74%
Joy/pride/trust/security	109	54.5%

Overcoming stress, fear, shame	27	13.5%
Continuity of the methodology	12	6%
Dissatisfaction:	52	26%
Pressure and stress	36	18%
Frustration and fear	16	8%
TOTAL	200	

AF, absolute frequency; %AF, percentage of absolute frequency. Own source

Theme 1.2. Students' perception of the strategy implemented in comparison with conventional methods

In this theme, students' comparative perceptions regarding the more conventional forms of learning from previous academic years are set forth (Table 4). Participants state that working with their classmates has been more motivating, has allowed them to develop more fellowship and they have obtained a better gymnastic performance (35.54%):

Already in previous years we had become familiar with this type of activities that we have carried out in the subject but I was more afraid when practicing. In this regard, this year I felt better for the teammates since they have provided me with a lot of confidence to be able to perform the acrobatics (Student_38).

The possibility of cooperating in a group was enriching compared to the previous year when we worked individually, since this year we were able to learn from each other (Student_44).

Likewise, they have sensed greater freedom, they have been able to be more creative than on other occasions, which has generated a greater enjoyment of the activity (29.29%). This is stated by the following students:

It is different since we can make our own choreography and we have more space and freedom, being able to exercise our own judgment and raise our opinions in the group (Student_40).

The working style is quieter, more efficient and more entertaining, therefore more varied when working, if compared to with previous years (Student_04).

On the other hand, there are codifications associated with the difficulties that students find in the development of the cooperative project. The most recurrent reason is the dependence on the group and the problems they have encountered in order to reach the necessary agreements to complete the entire process (25.39 %):

The greatest difficulty has been to agree the entire group member. When you propose something, maybe your team rejects it because it doesn't work out very well (Student_11).

The group work is more complicated than the individual one, since different ways of thinking have to be taken into account (Student_20).

To a lesser extent, other causes related to stress, fear and nervousness that the students have felt at some point in the process and especially in the presentation of the final work in front of the other classmates (6.64%) emerge. Finally, there are statements where students indicate that they find nothing different in the strategy used (3.12%). They state it as follows:

A problem that I have encountered has been the staging, the direct performance. You get very nervous (Student_13).

I have not found anything different or advantageous with respect to the previous year (Student_67).

Table 4. Perception of differences in learning strategies

Codes	AF	%AF
Greater fellowship and performance	91	35.54%
Greater freedom, creativity and attraction	75	29.29%
Dependency and group disagreements	65	25.39%
Stress, fear, shame, (final performance)	17	6.64%
No difference	8	3.12%
Total	256	

AF, absolute frequency; %AF, percentage of absolute frequency. Own source

Theme 2: Teachers self-assessment of their own practice

The assessments of the teaching staff of PE have been included according to the four main blocks of objectives: acquisition of gymnastic skills, learning management, social aspects and protocol of the unit.

As regards the *gymnastic competencies*, teachers claim that these are achieved by all teams. It is observed that four students from other schools, without previous experience, needed adaptations in their learning, but these were carried out without hindering the design decided by their groups. Other specific interventions were due to the scaffolding whose offer was necessary in the most demanding technical acrobatics. These acrobatics were: the flic-flac, the somersault and the front handspring. Acrosport figures were introduced in the choreography properly and had sufficient quality of execution and creation, except in two groups where they were quite simple to execute. In this line, a group with a clearly differentiating level from the rest stood out. The acrobatics and linking elements were adequate except in two of the groups whose performance was lower, shining in this competition the same group that excelled in the level and execution of acrosport figures.

Regarding the *learning management abilities*, all groups were able to design and coordinate the choreography in a consensual way and there were no inconsistencies when implementing the design. The reflection on the process

led to some changes. Some groups made minor changes to adapt the design to the implementation without assuming any conflict between them.

As for the *social aspects*, there is a good level of participation and respect for the opinions of the other group members. However, there were some cases of students who had no interest in collaborating although taking into account the entire class they were not relevant cases. The work environment was relaxed and friendly in the vast majority of the sessions although some conflicts are noticed in the groups associated with the decision-making of the choreography and the times and spaces to practice the scene outside of school hours.

Regarding the organisation *protocol*, the performing themes were adequate, the musical themes were appropriate, the costumes and makeup were very well taken care of by all the groups and finally, the quality of the videos (recording/editing) followed the tonic of the aforementioned. A very excellent group, two groups performed a standard quality work and one team had to improve the presentation of their work. In sum, the teaching staff successfully monitored the process through the field notebooks.

4. DISCUSSION AND CONCLUSIONS

The achieved results allow us to answer and discuss the research questions formulated.

First question: Students' reflection on their learning

The students have proven to have reflection capacity concerning their own practice. In the analysis of the students learning *expectations*, we proved that there is a high degree of compliance. There are minority cases of students that are still cautious about the group learning and fear that the group interaction can hinder their personal evolution (McWhaw, Schnackenberg, Sclater, & Abrami, 2003).

When talking about their *achievements*, the high school students (post-mandatory secondary education) value the improvement of their gymnastic competences, their social relationship within the group and the cognitive competences regarding the practice of decision-making. In relation to the experiences that emerge from the collaborative learning experiences, they describe them as positive in most cases. These experiences are focused around the opportunity to improve both the learning of gymnastic quality and to overcome fears thanks to the help offered by the group (Duarte, Carbinatto, & Nunomura, 2015; Nunomura, Carbinatto, & Duarte, 2009). Several studies (Metzler, 2005; Jolliffe, 2007; O'Leary & Griggs, 2010) highlight in collaborative learning the ability of students to share responsibilities and demonstrate a social and emotional maturity, which allow them to teach and learn from each other.

Students notice the differences in the methodological strategy carried out, with respect to other more directive and traditional strategies used. They indicate a

greater satisfaction with the more freely raised learning techniques achieved in an environment of collaboration in decision making. These findings reinforce the intention to continue investigating the effectiveness of less directive methodologies for learning of gymnastic that consider the interests of the student, as has already been done by some authors such as Nunomura, Okade and Tsukamoto (2009) and O'Leary and Griggs (2010).

In short, this methodology has managed to lead to the students' reflection on their own learning. This is an achievement that compensates the methodological effort as it shows the cognitive effort made by students. Likewise the involvement of students in learning is reached as well as the improvement of the theory-practice relationship (Chun-Chieh, 2019; Fernández-Río & Méndez-Giménez, 2016; Goodyear, Casey, & Kirk, 2014).

Second question of research: teachers self-assessment of their own practice

The participating PE faculty noticed that the proposed *gymnastic attainments* were achieved in every group of students. Academic achievements were accomplished in a more agile and effective way. However, in other investigations such as O'Leary and Griggs (2010), by using a collaborative strategy for learning of gymnastic, psychomotor competence was the least developed in comparison with affective-social and cognitive competence acquisitions.

The level of *management* and *satisfaction* in terms of learning by the students is highly valued by the faculty that uses this methodology. Both the ability to coordinate the choreography, plan and programme all the process in a common vision and its development in a friendly environment without tensions or conflicts were achieved. The used strategy offers the teacher the opportunity to focus the learning according to the needs and interests in the different groups, concentrating on the specific aspects of learning (Lorente, 2008).

The *social* competences developed through this learning strategy have shown that the group itself provides the instant feedback to their teammates and the contributions are interconnected and summed up as in other collaborative studies performed in the context of Physical Activity and Sport (Metzler, 2005; O'Grady, 2012; O'Leary & Griggs, 2010). Likewise, this research emphasises the students' improvement of their reflection capacity and judgement on the process carried out. As well as in other studies, one of the keys on the investigation of group dynamics is the concept of the group guideline (Hagger & Chatzisarantis, 2005; O'Grady, 2012), that is, the group decides what is and is not acceptable within the operation of the equipment. The group guideline in collaborative gymnastics is characterised for having an inclusive, supportive and non-hierarchical work. This also occurs in other disciplines derived from gymnastics such as the parkour (O'Grady, 2012).

The discussion of the results offers enough signs and evidences to conclude that the methodological implementation, concerning the proposed questions, has been satisfactory for the students and the faculty of this study. It was not

our intention to conduct an investigation of gymnastic performance. Instead, we wanted to make an approach to the students' thinking about the methodological options that motivate and encourage them to learn. Nevertheless, the reflection on the results of the process leads to submit proposals for improving the strategy in order to help to better control the achievements. In this sense, the research team considers adding the following strategies:

- Start the process with a pre-session on time control techniques in collaborative processes and other basic strategies for managing the group participation and decision-making.
- Conduct sessions of all the groups together during the process to discuss the design before its implementation. This would ensure that the obstacles are visualised before the implementation and that each group can contribute with its vision to the design the others.
- Make a final pooling to reflect on all the activity carried out and jointly assess the work of all groups.

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