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IF I WERE BLIND-
AN APPROACH
TO
PHYSICAL ACTIVITY
FOR STUDENTS
WITH
VISUAL IMPAIRMENT

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ABSTRACT AND KEYWORDS

Abstract

Today we are in class with students with varied characteristics, some of them with specified particularities to deal with, and we need continuous and updated training. It may be the case of children with visual disabilities. Therefore, the approach followed is that of a didactic proposal of initiation to sport without vision and goalball through cooperative learning. First, carrying out a review of the literature on cooperative learning and physical education and then the didactic proposal on physical activity and children with visual impairment.

Keywords

Physical education, visual impairment, goalball, inclusion.

1. INTRODUCTION

As a part of day-to-day teaching, we face continuous challenges, many of immense difficulty. One of them could be to offer students with any disability, whether motor or intellectual, physical activity in similar conditions to the rest of colleagues and with objectives, contents and activities that adapt to their needs using an inclusive methodology.

Furthermore, physical education lessons do not play with the same variables, nor the context is "traditional", pupils sitting on chairs and attending lessons. In these circumstances, educators tend to use multiple methodologies to carry out with students.

However, we do not achieve all of them with the objective we propose or do not adapt to the characteristics of students. It is not because we are not looking for new ways to innovate or integrate them, it is due to our curriculum is not already updated and our possibilities (economic, material or human) to do so are minimal.

Having said this, we are going to focus on children with visual impairment carrying out a cooperative learning methodology. Each student has to be aware of what it means to have classmates with these characteristics and be able to collaborate. Therefore, it would help so that everyone can enjoy quality education.

Later, it will develop a goalball didactic unit where we will be able to identify this kind of content for our students (with and without visual impairment) and the methodology performed.

Unquestionably, it is essential in our society to provide a satisfactory experience to each of our students so that in the third pedagogical time, extracurricular leisure time, they can develop it with total freedom.

Moreover, in the same way, we will combat current issues such as obesity and the subsequent onset of cardiovascular diseases. The majority does not know it of them, but if they receive instruction about it, they will know how to act in the future.

2. COOPERATIVE LEARNING

2.1. Definition and stakeholders

Based on Slavin´s study (2011), we can deduce that cooperative work or collaborative learning is a successful educating method in which a group of pupils have to work together in groups making a project or task assigned. Similarly, regarding the features, following ideas from Dillenbourg (1999) and Raez (2018) can appreciate these:

a) Achieving depends on individual potential and work.
b) Each member of the team will have an evaluative responsibility: individually and collectively.
c) Competitiveness within the team will not, but collaboration at all times.
d) The essential factor is learning and solving the task or project correctly.
e) The strength of the social potential will cause that the advantages are enhanced and the weaknesses decrease.
f) The roles determined in advance, and the teacher knows the solutions and outcomes of the process that takes place.

Additionally, critical aspects in cooperative learning were established to achieve success, taking into account the following structure inspired by Johnson and F. Johnson (2009):

- The first vital components lie in strengthening the interdependence of those involved in the task or the project. At the same time, make them see that without the most significant individual effort, they will not reach the proposed global goal, and for that, they must organise and be prepared.
- The second key component of cooperation should be to facilitate and promote interaction among all project members to encourage fluency, help and advice among them and create a pleasant working climate.
- The third key component is to ensure the inestimable work of each one as a team and to verify each one of them is doing work on time.
- The crucial fourth aspect is to favour the development of interpersonal skills within our group. Therefore, the use of strategies should be encouraged for those

with a lack of confidence and students with better social skills should have a crucial role in this process.

- The last key factor of successful coactive learning is to review the project globally. It requires students to meditating on their colleagues' relationships and work. Questions proposed by Gillies (2016) are frequently used to arouse this type of considerations such as: “Did we acquire anything valuable?”, “What do we require to enhance?” or “How could we fulfil that?

2.2. Benefits, drawbacks and uses

Gil (2010:20) showed the benefits of cooperative learning as “decreasing learners’ anxiety; facilitating learning; increasing motivation; encouraging interaction and meaningful negotiation among learners”.

At the same way, Gil (2010:139) indicated that “it promotes as another strategy to integrate pupils” and Gull & Shezad (2015:247) called it as an “instruction strategy with positive and improved results”. Others academicals studies show these assets:

> Cooperative Learning brings about significant gains to students' learning and furthers their development as young people. Indeed, the reported learning outcomes of Cooperative Learning from these analyses and reviews can summarise as academic achievement (an ability to apply and understand content), interpersonal skill development and relations (communication skills and/or peer relations), enhanced participation (engagement with learning tasks), and an improvement in young people's psychological health (self-esteem and/or motivation). (Casey & Goodyear, 2015:4)

Similarly, Cronin et al. (2018:182) explain that “student centred-methodologies such as Sport Education Model or Cooperative Learning can teach students the following life skills: teamwork, communication, leadership, and problem-solving and decision-making”. (Cronin et al. 2018:182)

Another advantage, following the study of Sherrill (2004) is that as an ethically structured scene, physical education lessons create a perfect atmosphere for the broadening of social skills among the participants.

Concerning motor skills, Scally & Lord (2019) carry out a cooperative learning project called First Step Pack, where it is possible to notice this improvement:

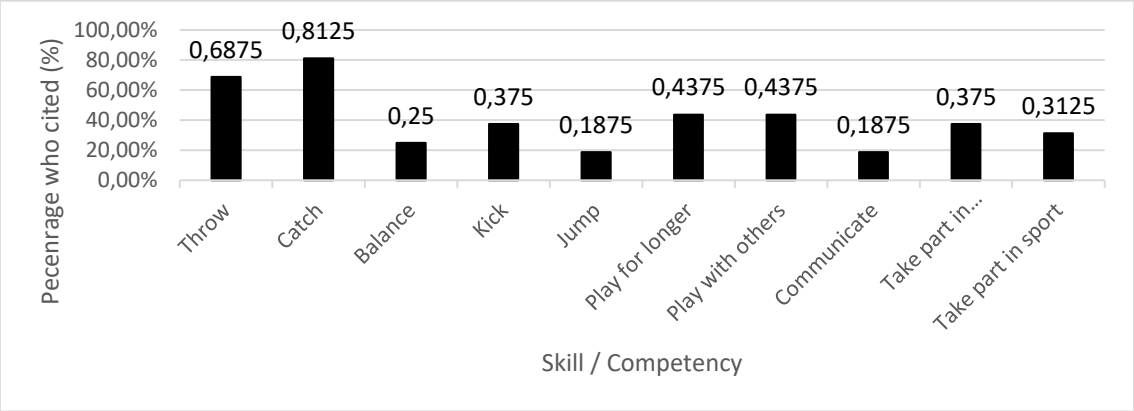

Chart 1. Observed upgrading in gross motor abilities and other issues. (Scally & Lord, 2019:20)

The results revealed unequal experiences of physical activity. Cooperative learning through "First Step Pack made considerable progress in developing children's physical activity levels". Players' motor skills (highlighting throwing or catching), social interactions and confidence improved. (Scally & Lord, 2019:1)

Conversely, taking into account cooperative learning drawbacks, Pavón & Ramos (2015:143) showed those who presented after a "study of a total of 25 teachers from the areas of English, Music, Physical Education, Science, Religion, Language and Speech Therapy, and Therapeutic Pedagogy".

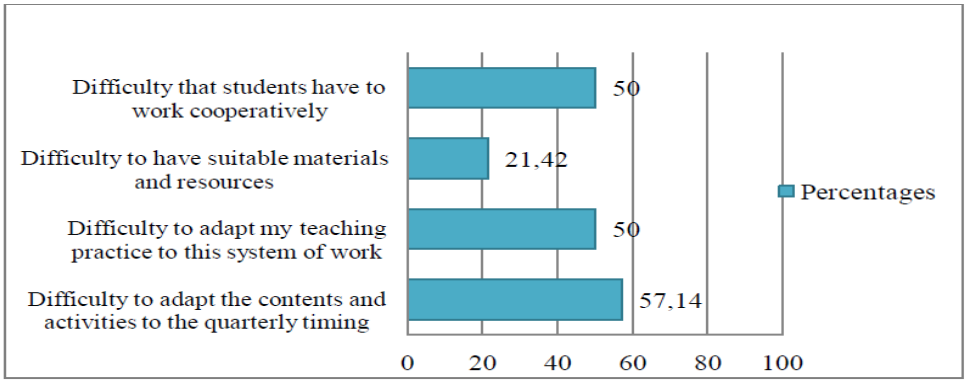

Chart 2. Reasons to not develop Cooperative Learning Projects. (Pavón & Ramos, 2015:150)

As we can observe, problems to adjust the subject and exercises is the worst possible disadvantage because of the complexity for teachers. Also, schools methodology must improve, and students should be aware of the importance of teamwork or sharing responsibility. Finally, economic or human resources could be higher to give quality education to our pupils.

Otherwise, referring to the work carried out by Goodyear (2012), we can appreciate some contributions to promote cooperative learning with our students:

> These include trialling two or three of the elements in other lessons to gain a good understanding of how to use them, spending plenty of time developing pupil social skills and being prepared to go back to this learning if necessary (Casey, 2010). Taking time to prepare adequate resources to encourage face-to-face interaction (Dowler, 2012) and foster individual accountability and keep the pupils on task (Velazquez, 2012). (O´Leary et al. 2015:3)

2.3. Cooperative learning techniques

Raez, J. (2018) established a questions sequence to answer the characteristics of these learning techniques. Analysing them, we can appreciate the following:

- **"WHAT?"** They have the following features:

1. What the student must do is stipulated step by step in a clear, structured and concise way.
2. They are encouraged with short-term goals.
3. The cognitive aspect is fundamental and primordial to coordinate and develop the task.
4. They require short work sessions (from just a few minutes to a whole class).
5. Dynamism and social skills are a necessary point to achieve the previous objectives.
6. The significant part of the interaction is carried out among the members of the group.

7. This interaction may increase in complexity if communication can establish with the rest of the groups.

- **"HOW?"** When implementing cooperative learning techniques in the classroom, the teacher will need to bear in mind the following:

1. The necessary time must be left when we establish a cooperative strategy so that the student can become familiar with it.
2. Leave the necessary time for the execution of activities.
3. Require work and progress of the task.
4. Assess the outcomes or products (formally- informally or individually-globally).
5. Provide support and project monitoring for our students at all times.

- **"WHY?"** The main goal whereby we use cooperative techniques in class is to achieve significant, memorable learning. The type of task must adjust to the needs and requirements of each class, such as the following (Ráez, 2018: 21-22):

1. Activating prior knowledge.
2. Focusing attention on the content.
3. Presenting content.
4. Promoting oral and reading comprehension.
5. Planning classwork.
6. Answering questions, completing tasks or solving problems.
7. Generating ideas or solutions.
8. Recognising and writing various types of text.
9. Finding, selecting and organising information.
10. Researching, studying and revising.
11. Clarifying grey areas and correcting mistakes.
12. Organising debates and discussions.
13. Summarising what has been learnt.

Having established the characteristics of these cooperative techniques, we will talk about student groupings. In this way, we will focus on those in pairs or groups of 4 or more. Some of them extrapolated to any subject and others more linked to physical education.

A. IN PAIRS.

Synthesising the informal cooperative techniques listed by Torrego (2012), we can distinguish:

- **Note-taking pairs**.

  It is noticeable in a misunderstanding of the notes we take on a particular topic. In this way, our partner will have the opportunity to correct those notes that are incorrect and be able to reformulate them correctly.

- **"I know, we know".**

  Based on the teacher's introduction of a topic, where each student will have time to write everything that arouses that topic in one part of the sheet. In the other part, after the established time, a pair will be formed, and they will write a text where the contribution of both reflect**.**

- **Think Phrase.**

  It is structured on the board of a message or topic, which students should write and discuss first in small groups and then with the rest of the classes, where each one contributes with their point of view.

- **Word Game**.

  The teacher establishes a series of keywords so that students write sentences about each of them, and they can discover the idea behind it. Subsequently, a discussion with the rest of the class must be established to establish the contents or tasks that can be carried out.

- **Think-pair-share.**

After reflecting on the question proposed by the teacher and contributing their conclusions, each member of the pair must agree to provide a joint version of that question.

- **Blank Mind Map.**

  When the unit is over, the teacher can deliver a blank concept map so that the student can complete it with the knowledge acquired and then be able to check it and correct possible mistakes.

B. IN FOURS.

Torrego (2012) established informal cooperative techniques being able to indicate the following ideas about main techniques:

- **Guided Reciprocal Peer questioning or Peer-assisted Learning (PAL)**.

  The goal of this technique is to provoke discussion among students about a specific topic or content area. The teacher should make a short display of content (10-15 minutes) and then propose a task and a series of questions about it. This activity aims to make students think about ideas that may be significant to the content. Later, in a larger group, each student indicates a question that must be discussed by the rest of the group members to conclude the content or unit.

  Sample questions such as: “What is the main goal of…?”, “How does influence...?”, “What is a new advantage..?”, “Indicate why?”, “Explain how?” “How can it connect this with what we learned before?” “What is the difference between this and that?” “How would we have to...?”, “What are the pitfalls and drawbacks?” or “What is the worst to…and why?”

  Nevertheless, this technique does not work, or it has a different result depending on the student's age. Similarly, Ward & Lee (2005:221) established that “the evidence from the studies reviewed about peer-assisted learning (PAL) shows that children as young as third grade can be taught to assess each other's performance, to provide feedback to peers, and to participate in collaborative group activities.”

- **Three-step interview.**

  Professors match the students, and we establish turn interventions for each of the questions prepared by the teacher. Subsequently, this interview on the topic will be with the member of the couple who has assigned it, where each will discuss their point of view on the proposed topic. Finally, pupils will do an interview in a group of four people, where they will establish the topic´s conclusions.

- **Three stays, one stray.**

  The teacher will form groups where they will be working to solve different problems. In this way, one member of each group will rotate for each of the groups explaining their work and progress and try to find solutions for their work.

- **Jigsaw.** A puzzle technique where each student has an immense responsibility**:**

> Consists of four stages. In the introduction (stage one) the class is split into heterogeneous 'home' groups of between four and eight pupils. Teachers explain the topic, pupils assessment and jigsaw learning use. Focused exploration (stage two) splits the 'home' group into two halves, and each half learns about a specific topic directly from the teacher or materials supplied by the teacher. Reporting and reshaping (stage three) involves the pupils returning to their 'home' group and teaching their fellow group members what they have learned. Integration and evaluation (stage four) consist of the pupils putting their work together to help produce the required piece of work. Just as in a jigsaw puzzle, each piece – each pupil's contribution – is essential for the completion of the work. (O´Leary et al. 2015:3)

In table 1 below, we can see the different problems with which the authors mentioned were found to carry out the cooperative learning technique jigsaw and what effects occurred in the methodology so that they could execute it correctly and how it was working with such learning technique.

In general, we can appreciate that the effects put the focus on a reduction of the complexity of the exercise, greater collaboration and participation of all participants and in short, greater agility in the dynamics.

Issues using jigsaw learning	Effects of the issues using jigsaw learning
The limited practical ability of the pupils	
a. Pupils inability to perform gymnastic skills	1. Greater teacher led instruction teaching fundamental movement skills 2. Reduced emphasis upon pupil cognitive and social learning
b. Pupils inability to select and apply gymnastic skills	3. Majority of the pupils observed and attempted to duplicate the actions of the higher ability pupils
The pupils' minimal teaching capabilities	
a. Pupil teachers inability to teach according to the needs of their peers	1. Students reduced the content that pupil teachers taught to their peers 2. Students assisted pupil teachers to teach 3. Students by-passed pupil teachers and taught the pupils themselves
b. Pupils inability to offer their peers specific and detailed feedback	4. Students offered pupil-teachers verbal information 5. Students by passed pupil-teachers and offered feedback directly to the pupils
The pupils' problematic social relationships	
a. Pupils were difficult to teach b. Pupils were demotivated and disruptive	1. Supervising teacher had to 'step-in' and remind pupils of their responsibilities
c. Pupils refused to work in heterogeneous groups	2. Friendship groups replaced some heterogeneous groups

Table 1. Problems and outcomes of working with Jigsaw learning. (O´Leary et al. 2015: 9)

- **Station Work.**

  Physical education teachers widely use it in their practice, and it is also called circuit training. It is a technique where students can organise themselves (in pairs or groups of 4) in different stations (usually 8-12). These stations are different exercises on specific content (for example, to develop strength: push-ups, squats, abdominals, lumbar) and each one of these is explained synthetically on a task sheet, the essential steps to have considered. The time spent in each of the stations depends on what we want to work and how. In the same way, the number of laps that to this circuit (2-3 frequently). The overall duration is usually about 25-30 minutes.

- **1-2-4.**

  The teacher states a problem. Each student spends a few minutes to try to solve it or to find a solution. Then they establish a debate with his/her partner and come up with a common point of view. Then, the same dynamic will be carried

out with the group. Finally, the debate will be extended to the rest of the class to find the best possible argument.

- **Pens in the middle.**

  The teacher poses a problem or question to the students. The teacher appoints a *moderator* within each group. The pens are in the middle, which is a sign to listen and not write. The moderator reads the problem or question and makes sure everybody understands and gets the chance to express their opinion. They also make sure that everyone has understood the solution. Then, students take their pens and write it.

- **Rotating paper.**

  The teacher hands a page divided into four parts, with sentences about the topic at hand. The paper will rotate every few minutes for each one of his/her classmates, and then for the rest of the groups where their classmates will pour their opinions and their attributions so that finally, each one individually can have the complete information possible about the topics raised.

2.4. Cooperative learning in physical education and children with visual disabilities

2.4.1. Definition and stakeholders

Based on the Individuals with Disabilities Education Act (2004), "visual impairment, including blindness, refers to a decrease in vision that, even when corrected, adversely affects a child's educational performance. The term includes both partial sight and blindness". (IDEA, 2004, sec. 300.8)

Acquired/adventitious	Vision loss after birth
Acuity	Visual clarity. Acuity loss refers to a decrease in visual clarity.
Albinism	Lack of pigmentation in skin, hair and eyes. Characterized by decreased visual acuity, photophobia, nystagmus, and strabismus (difficulty coordinating eye movements)
Congenital	Vision loss that is present from birth
Cortical visual impairment	Difficulty processing visual information due to damage to the visual cortex of the brain
Field	Area one can see. Field loss typically refers to decreased central vision, decreased peripheral vision, or scotomas (blind spots).
Legally blind	Vision that is 20/200 or less *with correction,* or field vision of less than 20°.
Light perception	Enough vision to tell if a light is on or off, if it is day or night, etc.
Light projection	Enough vision to determine the direction of a light source
Nystagmus	Involuntary eye movement
Optic nerve atrophy	Damage to the optic nerve, resulting in loss of visual acuity and visual field
Optic nerve hypoplasia	Underdeveloped optic nerve, resulting in nystagmus, strabismus, and acuity/field loss
Photophobia	Light sensitivity. Considerations in a PE environment include a possible need for sunglasses, a visor or cap with brim, and extra time to transition from bright to dim lighting and vice versa.
Progressive vision loss	Vision continues to deteriorate over time
Retinal detachment	Separation of the retina from its supporting layers. Can occur as a result of trauma to the head, including contact sports, diving (in a pool), or getting hit with flying objects
Retinitis pigmentosa	Field restrictions, night blindness, phobophobia, reduced depth perception, scotomas, and reduced color vision. Associated with risk of retinal detachment
Retinopathy of prematurity	Eye development disrupted due to premature birth, which may result in blood vessels breaking (causing bleeding into the eye) and scar tissue (causing retinal tears). May be associated with risk of retinal detachment

Table 2. Useful Terms to Know in Discussing Visual Impairment. (Lieberman et al. 2019:32)

Particularly in Spain, "inclusion process require a close collaboration with professionals and social workers such as the family, the Spanish National Organization for Blind People (ONCE), the university/school service for students with disabilities (if it is the case), faculty managers (if it is the case), professors and the student's peers". (Reina & Álvaro Ruiz, 2016:40)

Below we can observe a figure with the different stakeholders involved in the process of including visually impaired students in a physical education class and their leading roles. Besides, we emphasise the invaluable presence of each one and the coordination needed to make it a reality.

Figure 1. Stakeholders that participated in this integration approach and their leading roles. (Reina & Álvaro Ruiz, 2016:43)

2.4.2. Needs and development

The majority of the educators have not received any formation related to children with disabilities during their studies and later. That way, some studies corroborate this statement indicating that "teachers require a basic understanding of the needs of students with vision impairment, whether as part of their teacher training or a unit has taken when a teacher becomes aware they will have a visually impaired student in their class" (Southcott & Opie, 2016:29).

Because of this, recent investigations have shown that "physical educators preparation to treat with children with visual impairments is not adequate" (Lirgg, Gorman, Merrie, & Shewmake, 2017:17). Other studies Lafont et al. (2017:335) demonstrate "how, in PE, cooperative learning may provide relevant modes of inclusion under certain conditions, especially for students whose initial motor skill level is low".

Among traditional lessons, physical education (PE) is one of the most exciting areas for inclusion. Indeed, "physical education, music and art education", are some subjects which "experiment" with school integration. (Alquraini & Gut, 2012:44) Furthermore, as stated by Lieberman, Lepore, Lepore-Stevens and Ball (2019), "for children with visual impairments to become physically active and self-determined

adults, they must be provided with the same opportunities as their same-age peers with the support necessary to ensure full access to the physical education curriculum".

Moreover, as indicated by Murphy & Carbone, (2008:1057) “the participation of children with disabilities in sports and recreational activities promotes inclusion, minimises deconditioning, optimises physical functioning, and enhances overall well-being”.

Following the investigation carried out by Majoko (2019:7), most students reported an emergence relationship with these themes: “knowing individual children, teacher-child relationships, child–child relationships, collaborative structures and cultures, adapted instruction, concerns about inclusion, and strategies to enhance inclusion”.

As we can see in the table below, it shows the accommodating and the use of different strategies both to teach a class and to evaluate students by three different teachers and schools.

Item No.	Strategy	Class teacher of school A	Class teacher of school B	Class teacher of school C
Instructional and assessment accommodation				
1	Clarity of presentation	Not at all	Most of the time	Not at all
2	Peer related learning	Sometimes	Most of the time	Not at all
3	Individualize instruction	Not at all	Most of the time	Not at all
4	Extra time to completion of task	Not at all	Not at all	Not at all
5	Tactile teaching aids	Not at all	Not at all	Not at all
6	Verbal assessment method	Sometimes	Most of the time	Not at all
7	Braille question papers	Not at all	Not at all	Not at all

Table 3. Accommodation strategies used by teachers. Anuruddhika (2017:174)

If we analyse the data shown in the table, it draws attention as none of the three teachers used: extra time to completion of the task, tactile teaching aids and Braille question papers. Any of the teachers did not use two of the three means of accommodation that help people with a visual disability. It leads us to think about a lack of training or resources and a need to update oneself to the needs that this type of group requires.

Another aspect which did not help was "overcrowded classrooms without any teacher assistant because it brought significant limitations for teachers' instructional behaviours towards diversity" (Anuruddhika, 2017: 177). Therefore, the reduction of ratios per class could be a solution to promote the integration of these students.

Similarly, concerning the treatment of visual impairment students within physical education class, Lieberman et al. (2017) created a rating scale to measure the degree of inclusion in the classes obtaining the following results:

> Teachers who include all children during the warm-up differentiate instruction, and support autonomy within their classes then their classes would align with recommendations from the literature (e.g. Grenier, 2006; Valentini and Rudisill, 2004) and scores from the LIRSPE (Lieberman–Brian Inclusion Rating Scale for Physical Education) would be high. However, if teachers do not sometimes use students with disabilities in demonstrations, include them with assessment scores, or try to maximise the use of peer and para-educator support, then scores from the LIRSPE would be lower and in alignment with the literature inferring that more effort is needed to foster inclusion. (e.g. Grenier, 2006; Klavina and Block, 2008) (Lieberman et al. 2017:11)

2.4.3. Barriers

It is perhaps the most determinant elements to take into account if we want to achieve inclusion with visual impairment pupils. There is a wide range of barriers which can modify the context completely. Among them, these are related to environmental factors in comparison to genetic issues. As affirmed by Haegele, Brian & Goodway (2015:320), "visual impairment has been associated with inequitable opportunities to take part in physical activity and sport". It is part of our work to fight against this type of statements.

In the following table, we can see a study about obstacles detection before practising any sport. Among them, physical or visual impairment and lack of confidence get the highest frequency. It is surprising how no perceived barriers it is also on the top of frequency.

BARRIER	FREQUENCY
Physical impairment	13
No perceived barriers	9
Visual Impairment	8
Lack of confidence	8
Lack of understanding of teachers and coaches	5
Lack of coordination	5
Fear of Injury	5
Comparison to or Interactions with Sighted Peers	5
Catering to children with many incapacities and optic impairment	4
Poor Ball Control Skills	3
Lack of balance	2
Epilepsy	2
Timing of activities	1
Sun Exposure	1
Need for adapted equipment	1
Learning Disability	1
Hearing Impairment	1
Financial Cost	1
Awareness of clubs for children with visual disabilities	1
Accessibility of facilities	1

Table 4. Detected obstacles to take part in physical activity. (Scally & Lord, 2019:17)

On the contrary, other findings suggest that “low physical activity levels of school-age individuals with visual impairments may be related to perceived participation barriers including the availability of appropriate opportunities rather than visual acuity or educational setting”. (Haegele & Porretta, 2015:68)

2.4.4. Modifications to activities

To carry out this methodology, we need extraordinary work. Thus, as Grenier et al. (2017:53) said "planning and forethought, general physical education teachers can accommodate the needs of students, including those with severe disabilities”. Within those needs, some of the most important are the relatives to the activities which we can distinguish according to equipment, rule and boundary modifications in the next table:

Modifications to Activities for Students with Visual Impairments

Modification Type	Example
Equipment modifications	• Using a larger ball • Using a bright or high-contrast ball • Using a softer ball • Deflating a ball to slow it down • Using balloons or scarves that will stay in the air longer • Adding sound sources behind goals, bases or the basketball net • Adding a beeper or bells to the ball • Lowering targets/goals, or making the goals larger • Tying a plastic bag around a ball to make noise as it rolls • Making scoring a goal audible by tying bells onto the goal nets
Rule modifications	• Giving the offensive player more space between self and the defender • Only using bounce passes or rolling the ball during basketball • Forgiving technicalities • Allowing more bounces in volleyball • Assigning player roles • Requiring everyone to touch the ball before scoring • Giving everyone a turn before changing possession
Boundary modifications	• Increasing or decreasing the size of the playing area • Placing rope under floor tape to create raised boundaries • Using caution tape or flag-rope to mark off the playing area • Providing sound sources behind goals or other target areas • Using bright tape or high-contrast colors on the floor to make boundaries • Using larger cones to mark play areas • Using colored tape to increase the contrast of equipment against the background, such as high-jump standards and poles, or the edges of a balance beam

Table 5. Modifications to Activities for students with visual disabilities. (Lieberman et al. 2019:36)

Activity	Modification	Description
Running	Sighted guide	Runner grasps the guide's elbow, shoulder or wrist, depending on what is most comfortable.
	Tether	The runner and guide grasp a short string, allowing the runners to have a full range of motion for arm swing.
	Guide wire	The runner holds a string attached to a fixed wire and runs short, straight distances independently.
	Sound source from a distance	The runner runs toward a sound source (clap, bell).
	Sound source	The guide rings bells or shakes a noisemaker while running side by side.
	Circular running	The runner runs in a large circular motion holding a rope that is staked into the ground.
	Human guide shirts	The runner runs behind a guide wearing a bright shirt (low vision).
Bicycling	Stationary bike	Biker rides a stationary bike with no modifications.
	Tandem bike	Biker can ride a tandem bike with no modifications. The sighted person acts as the pilot (front seat), and the individual with a visual impairment acts as the stoker (back seat).
	Side-by-side bike	Biker can ride with no modifications. Two bikers can ride sitting next to each other on this adapted bike. Few balance or communication issues.
Swimming	Tapper	A sighted person taps the swimmer on the shoulder with a lightweight pole that has a tennis ball on the tip when he/she is about eight feet from the wall as a signal to turn.
	Sprinkler system	A sprinkler can be set up on deck so that water sprinkles about eight feet from the wall in order to signal swimmers of the approaching wall.
	Counting strokes	Swimmers keep track of how many strokes it takes to get from one end of pool to the other and count strokes while swimming.
	Side of the pool	Swimmers can use the side of the pool or lane lines to help them swim in a straight line.

Table 6. Modifications depending on activity. (Lieberman et al. 2019:37)

As we can see, a series of relevant and exciting modifications are established to adapt them to any content that we want to develop in our day to day with this type of students. Similarly, instead of buying or ordering the necessary material to carry out in our classes, self-construction by students can be encouraged, and the students could be aware of the recycling and consumerism so established in our society.

Stipulated these problems to teach PE utilising a traditional methodology (content, language and practice), Grenier, Collins, Wright, and Kearns (2014:51) proposed "integrating units on teaching sports to people with disabilities units into PE programmes", as they advise:

> Scheduling a disabled sports unit is an effective strategy for favourably shaping the representations both typically developing students and teachers. More flexible programmes that are open to adapted and disabled physical activities seemed to be an effective strategy for helping the teachers build favourable representations and offer pupils with and without disabilities a way to practise PE together. (Tant & Watelain, 2016:9)

2.4.5. Goalball

Following this argument and based on what is described by the Association of Blind Athletes in the USA (2014) we can name goalball as a sport of intermittent endurance, motivating and in search of constant challenges, and boys or girls can play that with or without a visual disability. However, as indicated by Laughlin & Happel (2017:16) it can be played for people without this visual problem and the fact that "introducing goalball as an inclusive secondary physical education curriculum unit is a growing trend that can if developed appropriately, yield positive outcomes for students with and without visual impairments".

> Goalball represents a sport those with visual impairments can enjoy, in both a competitive and recreational capacity, well into adult life. Likewise, any student with or without a disability can benefit from an appropriately designed goalball unit that connects the sport to the broader Paralympic sport culture. This connection can expose students to numerous sports designed for varying types of disabilities, which can be played competitively by athletes with disabilities or recreationally by those with or without disabilities. The appropriately designed goalball unit also serves as a means to promote student cultural awareness toward those with disabilities. (Laughlin & Happel, 2017:17)

Teaching atmosphere reports the disposition of professors to introduce cross-cultural relationships so that pupils may "benefit from culturally responsive and success-oriented physical education experiences". (Hodge, Lieberman, & Murata, 2012: 46)

3. TYPES OF CONTENT TRAINING FOR PHYSICAL EDUCATION EDUCATORS

Tant & Watelain (2016:11-13) propose these types of content training for PE professors to advise them being more inclusive and handy in their schooling: multidisciplinary training, didactical disciplinary training and pedagogical disciplinary training. Based on what is proposed by these authors, we will synthesise it with the following ideas.

3.1. Multidisciplinary training

In the analysis of this type of training, we could consider two steps to develop this workout. The first part is gathering data about the characteristics of the pupils with afflictions.

To achieve this, it appears vital to add a manager (as catalogued by Sato & Hodge, 2009) who would guide collectively all of the teammates that could aid the professors and the components of the educative association to define the scholars with special education needs accurately. At the same way, it would help the educators comprehend the repercussions of the incapability on education (as proposed by Lieberman et al., 2002). The functional contribution of the pupil's family and the expert or medical workers seems conclusive.

Thus, the manager who would put every partner together as a crew to determine the distribution of the individual inclusive strategy (a modification of the agenda, accessibility of the classrooms, teacher assistant´s support, teacher formation). From this viewpoint, the modifications amongst all the members involved could be crucial to guarantee that the learner can securely perform the activities.

The second stage is to adjust the pedagogical factor of the pioneer statement of integration. To achieve that, “it is necessary that all of the teachers (the general teachers of different subjects, specialised teachers and teacher assistants) work together” (Grenier, 2011:107).

Similarly, we can focus on different aspects such as determine particular learning goals (cognitive, motor, social, emotional.) or enhance an ordinary educational plan suitable to the group to fulfil these learning objectives. Also, we have to pay attention to increasing modifications of qualified educating practices. Usual exchanges amongst professors are crucial to certify the study that an inclusive plan should have. PE teacher contribution to the collegiate group is essential to complete the approach. It is because of the knowledge about interaction with students and how to act in physical activity contexts.

3.2. Didactic multidisciplinary training

We have already talked about the different strategies to adapt to the activity of children with visual disabilities in physical education lessons. Among these, we can execute them within the multidisciplinary didactic training.

The “modifications for every activity” of some traditional aspects (materials, players, alternatives, ...) as verified in the survey of Combs et al. (2010:118). For instance, in soccer games, we include sound balls for students with disabilities. However, taking Block´s book idea (2007), we have to have some caution when we make modifications of the various games and activities to our students to satisfy the needs of all since the motivation and interest could be less towards these activities.

Moreover, an important aspect that could be carried out with integrative units is that students could become familiar with the reality that their classmates with disabilities face with as it is shown by Grenier et al. (2014:51) “disability sports units promote the practice of reverse integration”. Inverted integration let students taking part in an activity usually exclusive to people with disabilities (Hutzler, Chacham-Guber, & Reiter, 2013:579). For instance: both can practise goalball with and without visual impairment.

Analysing the spectrum of teaching styles, arranged by Mosston & Assworth (2002), we can choose the use of an inclusion teaching that establishes different levels of complexity in the activity adapting to the characteristics of the student. For example, If we plan to carry out an acrosport activity, the blind child can be a porter, helper, or even agile (with the help of his or her assistant), depending on whether the figure is on pairs, three people or a large group.

3.3. Pedagogical multidisciplinary training

Inspired by the article of Ko and Boswell (2013), we can affirm that all the adaptations at the instructional level can be grouped in a multidisciplinary pedagogical training to favour the elaboration of the programs and units by the teachers of Physical Education, improving motor aspects and to strengthening the relations between the classmates at a social level. We can synthesise the pedagogical training content following the features described:

The first of them is an atmosphere that promotes students' attention on their learning process (Valentini & Rudisill, 2004) rather than on the execution (as advised by Morley et al., 2005 or Smith & Green, 2004). For example, individual activities (jumps, agility, velocity), the teacher will be able to evaluate individually following standard scales and adapted to the characteristics of each student.

Another one is Cooperative learning, where each of the members of the groups has some functions that they have to carry out, and in turn, they must coordinate with the rest of the group members, to achieve the overall objective that would be the sum of individual objectives. This strategy is critical to collective sports, where the social aspect is crucial.

Moreover, peer tutoring is an instructional method that proffers help to children with disabilities so that they can practice and integrate with physical education classes.

4. ATTITUDES OF TEACHERS ABOUT INCLUSION

4.1. Recently qualified teachers

Concerning the initial preparation, Vickerman and Coates (2009: 137-150) investigated the demonstrations of nineteen lately competent PE teachers and two hundred and two PE pre-teachers via a poll.

In this survey, we could appreciate, for instance, that recently qualified teachers to rate their previous training negatively. Nevertheless, in a high percentage, novice teachers and those who are finishing their studies, value their training in inclusive education and the appropriate methodology, in fact, practical learning is the best valued by teachers and the most effective.

Another significant aspect was the help provided by the experienced teachers who helped the novices in their training so that they could know techniques to deal with students with needs.

The authors established that the training should pay attention more on the didactic factors and pedagogical alterations required to denote inclusive problems in a real atmosphere and decrease the amount of schooling time spent on theoretical aspects

about the incapability (for example, the anatomy of the eye, the origins and outcomes of ocular illnesses).

Furthermore, to achieve motor goals, everybody should contribute. The aims shifted towards motor learning and integration. We should also avoid the competition between our students which evidence differences in the interpersonal results.

4.2 Experienced teachers

Based on the study of Schmidt-Gotz et al. (1994), we can determine that the dispositions of t female teachers could have been better than those of male teachers towards coping with students with particular needs. Likely, teachers' mood toward this integration relies on "the type and the severity of the student's disability". (Qi & Ha, 2012:9)

However, the factor that most easily established teacher´s attitude was the perception of teachers about their visual impairment in children knowledge. Many studies demonstrated that it had a meaningful command on their advantageous thought towards the inclusive activity. (Obrusnikova, 2008:129; Papadopoulos et al., 2004:106)

Indeed, those more competent are those who have some knowledge about how to act with inclusion in physical education, and they consider it as a motivating challenge in which they need to work hard to provide a physical activity in which children enjoy.

On the other hand, Elliott (2008:48) covered with “the relationship between the attitude of teachers and the efficiency of interventions".

The results proved an alliance among educators' attitude toward integration and the productivity of teaching and learning process. Indeed, positive predisposition toward inclusion showed, “higher expectations for all their students” (along with any impairment or not). Also, “the number of practice attempts were also independently influenced by the type of student” (with and without disabilities). (Elliott, 2008:52-54)

4.2.1. Influential specific factors of students

Having the basis described by Tant & Watelain (2016:7-8), it is possible to highlight some factors. Firstly, it was about age or class grade where pupils passed

courses; the teachers spent more time preparing the classes and adapting them to the needs of their students. (Block, 2007)

Secondly, the type of disability in which professors shows a hostile attitude toward children with emotional disarrays rather than learning diseases. On the other hand, to sensory, mental or physical diseases, there are no substantial differences.

The final learner-specific aspect that affects educators' attitudes was the hardness of the disability as Meegan & MacPhail (2006:75), noted in their study. The results indicated that professors did not decide if they were favourable to teach learners with tough mental incapacities, and they did not agree about teaching students with grave psychological disabilities in their day to day lessons.

Thus, the incorporation of these aspects could have a fantastic effect on teachers´attitude, and on the performance of our teaching process.

4.2.2. The problematic of collective sports

Diverse studies have suggested that cooperative sports (football, handball or volleyball); establish an uncertain environment for pupils with visual impairment. Smith and Green (2004:597) proved that teachers tried to find the same opportunities to participate in children with disabilities; however, this did not happen in practice. Instead, “students with disabilities were excluded from the class because the official curriculum was very focused on competitive and collective activities”.

Furthermore, teachers perceived that we could include learners quickly with incapacities in individual activities or sport where they do not compare their performances and results with their classmates. Above, students with disabilities participated in a reduced quantity of individual or collective physical activities in comparison with their classmates.

Due to this, the inclusion of adapted sports modalities (goalball, beep-baseball, volleyball sitting) must emerge in our day-to-day teaching so that our students can get rich and experience sports. Students with visual disabilities, so they can play in the same conditions, and their peers without visual disabilities so they can experiment, the obstacles faced by their classmates with disabilities in the class day by day.

5. DIDACTIC PROPOSAL

5.1. Identification

The title of this work is "If I were blind". It is a whole educational unit based on motor games using cooperative learning through goalball directed to the 3rd course of Secondary Obligatory Education. It is a sport aimed at people with visual disabilities which will help us in physical education class because all students will be able to experience this type of inclusive activity.

5.1.1. Description

Teaching unit dedicated to visual impairment. Addressing it in an inclusive way, on the one hand it is intended that students are aware of the difficulties experienced by people with this sensory deficit in their daily lives. On the other hand, teaching playful motor alternatives that they can develop and, finally, the development of other sensory and coordinating capacities by eliminating the vision in physical activity practise.

To start with the unit, students will provide opaque glasses or a sleeping mask. In the second session, they have to provide full clothes, a hoodie type. The cooldown of the initial evaluation session (pre-unit) will provide different models of opaque glasses and mask. Here there is a link[1] where pupils can understand how they can make one.

5.1.2. Link official curriculum

While a series of tables we will explain the use of the key competencies, transverse elements, secondary objectives, physical education goals and learning standards graphically. Some aspects of these elements will be developed more in-depth than others. We are going to indicate this factor with a scale where "*" (one star) is the minimum and "*****" (five stars) the maximum.

The following table shows the critical competencies of the Royal Decree guiding education at the secondary level. Focusing on our project, those that are most developed are digital competency (visualisation of videos for the different proposed activities or

[1] If the link does not work the web page direction is https://www.youtube.com/watch?v=klAUgdf3sZE.

audiobook manufacturing), social and civic competences (cooperation among students) or linguistic (braille language initiation).

KEY COMPETENCES (RD 1105/2014)							
Linguistic competence	Mathematical competence	Competence in Science and Technology	Digital competence	Learn to learn	Social and civic competences	Sense of initiative and entrepreneurial spirit	Awareness and cultural expressions
***	*	**	*****	***	***	**	***

Table 7. Key competences (RD 1105/2014). Own elaboration.

In this didactic unit, we are going to develop transverse elements from Decree 111/2016. These are inclusion, education for the convivence, ICT´s judicious use, interpersonal communication or healthy lifestyle habits.

TRANSVERSE ELEMENTS											
Respect Rights	Democratic Participation	Education for the convivence	Men and women equality	Inclusion	Interculturality	Interpersonal communication	ICT´s critical use	Road education	Healthy lifestyle habits	Economical competence	Globalisation and natural environment respect
***		****	*	*****	**	***	****		***		*

Table 8. Transverse elements (Decree 111/2016). Own elaboration.

In the next table we can see that the most developed Secondary Education objectives from article 11 of Royal Decree 1105/2014 in our didactic unit are:

> A) To assume responsible their duties, to know and exercisings their rights with respect, to practice tolerance, cooperation and solidarity between individuals and groups, strengthening human rights and equal treatment and opportunities

between women and men, as common values of a plural society and prepared for the use of democratic citizenship.

K) To know and accept the differences among others. Strengthen natural care and health habits and to incorporate physical education and sports to promote personal and social development. To value the human dimension of sexuality in all its diversity. Assessing critically social habits related to health, consumption, care of living beings and the environment, contributing to their conservation and improvement. (Article 11 of Royal Decree 1105/2014)

SECONDARY OBLIGATORY TEACHING OBJECTIVES											
A	B	C	D	E	F	G	H	I	J	K	L
****		**	**	**	*	**	*		*	*****	

Table 9. Secondary obligatory teaching objectives (Article 11. RD, 1105/2014). Own elaboration.

In the next table, we will focus more in-depth on these physical education objectives from Order of 14th of July 2016:

11. To show social skills and attitudes of respect, teamwork and sportsmanship in participation in physical activities, games, sports and artistic-expressive activities, regardless of cultural, social and motor competence differences.

12. Responsibly using information and communication technologies to collect, present and share information on different aspects related to physical activity and sport, including their activity, contrasting and citing the sources consulted (Order of 14th of July 2016).

PHYSICAL EDUCATION OBJECTIVES											
1	2	3	4	5	6	7	8	9	10	11	12
**		*				**			**	****	****

Table 10. P.E. objectives (Order of 14th of July 2016). Own elaboration.

Finally, the next table shows the assessment criteria and learning standards in physical education for 3rd of ESO in the Royal Decree 1105/2014. We will work the assessment criteria correctly and learning standards coloured in red.

1. To solve individual motor situations applying the technical fundamentals and specific skills of physical activities proposals, in real or adapted conditions.
4. To recognise the factors involved in the motor action and control mechanisms of the intensity of physical activity, applying them to their practice and relating them to health.
6. To develop activities of each phase in a physical activity session, relating them to the characteristics of the same.
7. To recognise the possibilities of physical and artistic-expressive activities as ways of social inclusion, facilitating the removal of obstacles to the participation of other people independently of their characteristics, collaborating with others and accepting their contributions.
9. To control difficulties and risks during their participation in physical and artistic-expressive activities, analysing the characteristics and the motor interactions that entail, taking preventive measures and security in its development.
10. To use ICT´s in the learning process, to search, analyse and select relevant information, preparing own documents, and making exhibitions and arguments of them (Royal Decree 1105/2014).

ASSESSMENT CRITERIA AND LEARNING STANDARDS IN PHYSICAL EDUCATION																																						
1					2					3				4						5				6			7			8			9			10		11
1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	5	6	1	2	3	4	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	

Table 11. Assessment criteria and learning standards in PE. (RD 1105/2014). Own elaboration

5.1.3. Temporalisation

Didactic unit to be developed in 4 sessions in the 1st Quarter for the third course of Secondary Obligatory Education. We will alternate it with the Endurance unit, so it lasts about one month (4 weeks).

Lesson I	**Lesson II**	**Lesson III**	**Lesson IV**
If I were	Physical activity without vision	Goalball	Blind baseball

Table 12. Lessons temporalisation. Own elaboration

5.2. Foundations

5.2.1. Pedagogical analysis

Montserrat Cumellas proposes as a first step the children with special educational needs treatment, group awareness about the limitations that disability implies for students who suffer from it.

News from EFE agency, published on Voice of Galicia's, about the recognised prestige of blind masseurs in China for their developed sense of touch, it shows that practice was limiting the visual sense, in addition to promoting the emotional competencies of empathy and compassion towards another, it is an opportunity to develop more abandoned perceptual structures.

This driving contribution of awareness-raising work recalls the characteristic of inclusive pedagogy: diversity is positive. Although the concept refers to the personal and not the general, as Gil Gonzalez said "talk of inclusion means belonging to a group, and is something that has to do, fundamentally, to feel part of it, be appreciated and be able to contribute something to it". However, in this sense, disabled athletes are an

example of resilience for society in general and students in particular, students who, with the slightest adversity, give up with the classic "I cannot".

We are not talking about physical activity, but many physical activities performed without vision. Focusing on the Goalball and baseball beep are collective sports, the first divided and the second bat and race. In other activities, usually psychomotor, because of the guide's dependence, they are converted to oculomotor situations.

The loss of visual references forces a motor readjustment of all necessary skills, in particular, displacements and receptions.

5.2.1.1. Training opportunities

- **Conditionals.**

Even though, the ONCE academic unit considers that goalball allows the development of physical abilities; it does not seem that the conditions are optimal for the development of these not being considered as such. It is placed alternately with a specific conditioning unit - the endurance -, to avoid that the groups with sessions on consecutive days, if any, express a rejection due to premature fatigue.

- **Motors.**

The loss of visual abilities forces readjustments of the body schema, the spatial structure and the temporal organisation of motor activity, putting into play all the coordinative capacities. This visual impairment forces us to concentrate on the exteroceptor senses of the ear and, all the proprioceptive senses with extremely positive connotations for the development of an adequate image of the movement.

- **Emotional / Social.**

Main objectives of the activity are focused on the capacity of the same to develop sensitivity to the difficulties of children with visual incapacities. Similarly, athletes with disabilities are examples of resilience and perseverance for 'normal' students. Moreover, the evolution in this unit is contingent upon trusting in the help offered by the partner - the guide/peer -tutoring.

5.2.2. Context

The 3rd of ESO´s students of this college are between 14-16 years old. These pupils have an excellent physical condition, and they like practising sport. It is a benefit to carry out this didactic unit.

The Goalball requires a clean soil of stones to avoid accidents when students are on the ground to capture the ball sound. Therefore, the ideal environment for goalball session is the gym. Beep-baseball can develop in the outer ring to have a larger space.

Related to this, many of the resources needed for the realisation of this integrating teaching unit are not available at the majority of high schools, so it is necessary to make a provision for accomplishment or modification of activities.

5.2.3 Characteristics of students

5.2.3.1. Levels. Motor Behaviour Evolution

Considering the behaviour evolution of students with vision capacity, we can differentiate according to the degree of emotional stress that loss of vision creates, the levels could be from 0 to 4.

In level 0, students who regardless of his fitness, show a rejection of the content. In the next level, called level 1, we can locate all those that do not manifest a rejection of the activity. Vision loss can generate panic and insecurity feelings that limit all their motor skills, moving slowly and with tension. Level 2 is where the students can perform physical activities without stress but at a rate and intensity much lower than their possibilities. In level 3, it is when the pace and intensity of the activities are slightly lower than with visual performance. Finally, at the highest level, called 4, students can perform physical activity with maximum intensity.

5.2.4. Previous references in Spain

We find some references in Spain regarding the implementation of this type of teaching units. It is a reduced amount, but we have to sensibilize to our students with these activities.

“Teaching unit: 'goalball' as ESO content” is one of them and it is carried out by the professor of the University of Seville, Adam Martin Cajaraville. Apunts Journal of 2003. It develops the structure of the unit, but the useful content is absent, although it shows images of how to reuse old basketball balls to make goalball balls.

Teaching units of Goalball and Baseball's Blind from IES Herrero of San Pérez (Ibiza) is another example. Each one develops five practical sessions directly focused on these sports-oriented to adult students

To conclude, a Goalball folder published in 2013 by the centre of educational resources of ONCE (Huguet & White, 2012). Curriculum materials geared toward the professional of the Physical Education in Primary and Secondary school to develop this content in the classroom. It explains technical and regulatory aspects, as well as relevant recommendations for the initiation (not incorporates many exercises).

5.3. Curriculum design

5.3.1. Didactic goals

For this educational unit, several specific objectives have been developed based on achieving the integration of this type of student in our subject. These goals should have been got at the end of this unit.

1. To sensitise students about the limitations and difficulties blind people have to face in their lives.
2. To familiarise with cooperative learning techniques adapted to these types of activities.
3. To learn specific sports as well as possible adaptations that allow the social integration of people with visual impairment.
4. To know the cultural heritage of games played without vision.
5. To know the proper behaviour to a visually impaired.
6. To improve temporal and spatial capabilities because of sound.
7. To gain confidence with the partner and develop responsibility towards it at all times.

5.3.2. Teaching content

A. Motor, affective and cognitive characteristics of children with visually impaired.

B. Guidelines to help children with visually impaired.

C. Cooperative learning techniques to improve social and motor skills in our students.

D. Fundamental regulatory aspects of goalball and beep-baseball.

E. Simplified and traditional games played without vision.

F. Shoots and interceptions of sound balls.

5.3.2.1. Interdisciplinary possibilities

Related to interdisciplinary work between subjects, as requested by the educative community, we can indicate the collaboration with Biology (proprioception and touch as interaction among pupils) or with Spanish Language (communication channels like Braille alphabet and the importance of intonation in the communication process, for instance, the dramatization of a text for making an audiobook). Also in Maths (mental calculation) or Technology (making a mask and a stick for blind following this link[2].

5.3.2.2. Teaching activities progression

In the first session, we will form different and heterogeneous groups. Following the jigsaw methodology, the teacher will instruct peer-tutoring and the guides (students without visual impairment of each group) on how to act in the different activities proposed. After that, we will use other cooperative learning techniques such as station work.

Regarding these activities, in first ones there is continuous replacement of vision references to its position, either by a guide provided or material resources (rope, mats). Subsequently, space must be structured with a different sonorous stimulus to establish conditions of safe practice.

[2] If this link does not work go to this web page direction https://www.youtube.com/watch?v=26xWnsL2jB4

Furthermore, the releases must evolve gestures made with segmental coordination (for instance, throwing with both hands) to global kinetic chains and other sophisticated techniques.

Similarly, we do not involve skills from a technical point of view; so the difficulty lies in the proper orientation In goalball, the student has the next equipment reference (field lines and goalposts), and he/she has to calculate the location of the target mentally.

In connection with receiving the ball, the student will adopt a static position waiting for the ball to intercept it when he/she is trying to grab space. More difficult is the movement in search of the mobile. In this sense, we can differentiate between a static or moving reference, being more challenging to catch it as much faster.

In these displacements, the difficulty comes from speed and type of movement, both related to the feeling of moral hazard. In Static activities, the student does not fear for their integrity (falls, collisions), because they use the arms as substitutes for vision.

5.3.3. Methodology

Concerning the methodology, we have prepared specific measures to ensure educational success in our practice where we want to achieve a good connection between students and content.

The first step is in reducing the risk objectively. There is a necessity of using fellow guides, and tactile references to delineate the limits of the track or displacement. Moreover, it is advisable the protections for the knees.

The second one is related to the commitment time. This teaching unit is alternated with another conditional so that the motor demands do not prevail in it. So, it is not necessary to reach large volumes of work, and the success depends more on the quality of the work, what we name significant learning.

The third is that we should present most activities as playful as possible to obtain greater involvement of the student. If we achieve this union, we will get significant learning for our learners. To fulfil this part, we organise our students in smalls groups and working in different stations. Also, we carry out the jigsaw methodology explained before.

The fourth is the adaptation to the student level. Tasks proposed are evolutionary, allowing different levels of implementation. We will work in small groups and different stations. For instance, while some students are capable of running activities, others perhaps walking.

The last one is related to the communication channel as in the initial stages to eliminate possible apprehension; we replace visual stimulus by a continuous kinaesthetic or acoustic stimulus.

5.3.4. Assessment procedures and criteria

According to the assessment, we have proposed the following statements. Every student must achieve them to pass this content of the subject. Both contain the most critical factors of this unit:

- To participate naturally in motor activities without vision, respecting the rules, using cooperative learning techniques.
- To search, analyse and select relevant information using technology resources to engage in physical and critical aspects of perceptual, motor and emotional people with visual disabilities.

We have made these procedures and criteria to make it more visual for students and to clarify the reason of their marks. The first distinguishing the type of evaluation and the second a rubric to evaluate the participation.

	Regular evaluation		Extraordinary	
		Exempt		
Student Notebook	4	10		
Participation	6 *			
Audio-book (optional)	+1			

Goalball Homework		10

Table 13. Types and mechanisms of evaluation. Own elaboration

* 1'5 point per session, if needed or justified exemption, activity score is assigned to the student notebook.

As we know, in our educative system, we have two types of evaluation: regular and extraordinary. Putting focus on the regular evaluation (the majority of the students) of our unit, we have three aspects to assess: student notebook (they will have to perform 10 activities to complete of each lesson evaluated from 0 to 10) and participation (following the items below) and also, they have the possibility to get an extra point (making an audiobook). If the student is exempt for any reason, this student will have to hand in the notebook to pass.

Contrary, extraordinary evaluation of our unit is due to the student has failed, or he/she was injured. In this case, they will have to hand in the goalball homework related to this unit. The professor will indicate it.

Having explained these parameters, we are going to explain the rubric of participation of each lesson. The criteria will be the material, the use of the mask, motor attitude, the shooting and the reception. Each one will represent 20% of the mark, and these could be evaluated from 0.25 (shoddy work) to 1 (totally completed work).

CRITERIA	0.25	0.5	0.75	1	%
MATERIAL	It does not provide material or is unusable.	No specific material (scarf, pants.)	Specific material or self-built	Material self-built more kneepads	20
USING THE MASK	It violates the rules to get an advantage.	It regularly violates standards for guidance	It violates the rules occasionally to orientate	Do not violate the rules	20

CRITERIA	0.25	0.5	0.75	1	%
MOTOR ATTITUDE	It remains static or afraid	It moves but usually in the wrong direction.	It moves slowly towards the target	It moves towards the target running	20
SHOOTING	It renounces to launches although he/she plays.	It usually launches in the wrong direction.	It Spear right direction, but usually it does not coordinate various actions.	It launches successfully coordinating several actions (turns, jumps)	20
RECEPTION	It does not move	IT lies to see what happens	It usually takes throws for the ball	It regularly launches to the ball movement (advance).	20

Table 14. Participation evaluation rubric. Own elaboration

To finish this part, we will explain the optional activity: audiobook. Students will record audio dramatising a chapter text with the help of Audacity free software.

5.3.5. Measures for diversity

Concerning to intrinsic limitations of the task, the activity mainly does not require any technical requirement or conditional imperative, so it must be no limitation on students without special educational needs.

Thus, we should avoid that the disturbance reaches pathological limits of a phobia. It is also possible that if the limitation is durable, some students may get dizzy. Therefore, there should be some alternation of roles.

Furthermore, to conclude, being visually limited to some students, we shall play the general teaching guidelines in physical education classes (table of modifications of activities).

5.3.5.1. Special educational needs

In this work we are going to pay special attention on special educational needs such as: sensory, intellectual, late entry, physical activity (motor skill) and possible exemptions. That way, we will assist to the differents needs in our class.

- **Sensory Disability**.
  Visually impaired do not imply any limitation on this unit. However, a hearing-impaired person could not perform activities where the external stimulus is sound.

- **Intellectual disability**.
  It must not involve any limitation to the activities. We have especially doubted with students with social difficulties because of their ability to make a responsible aid. In this case, this help should be supervised or supplemented with others.

- **Late entry.**
  Student notebook, images of the documents are intended to support the oral and written expression to facilitate communication with the student. However, students may require such other measures as may be re-elaboration of documents or continued support.

- **Physical activity.**
  Physical disability is one that affects the motor skill. So depending on the degree, we have to make more or less adaptation. If students can move – example, wheelchair – and they can move the arms, students can perform virtually the unit without accommodations. If it cannot move, it is possible to provide a stick to trap the ball.

- **Exemptions.**

  Students who cannot perform the activity should be assessed at 100% conceptually. If the exemption is partial and limited to a few sessions or activities, the assessment would be adapted.

5.3.6. Teaching materials and resources

Others essential aspects of our unit are teaching materials and resources. We have distributed them in two different tables: student equipment (for practice and documentation) and school (facilities, equipment and documentation).

STUDENT EQUIPMENT	
FOR PRACTICE	**DOCUMENTATION**
Sports shoes	Student notebook.
Sportswear	
Knees protections	
Opaque mask	
Old clothes. (Upper body)	

Table 15. Student equipment. Own elaboration

In school table, it appears (*) related to the material which student could reuse in failing case. Also, it appears (**) because the resources in high schools are limited, and we need to think about other possibilities to carry out our practice. Thus, it is essential to clarify that depending on the facility where we are teaching; we will need different materials for different activities as below is shown.

SCHOOL			
FACILITIES	**EQUIPMENT**		**DOCUMENTATION**
School gym	Seventeen opaque masks *	Old clothes: six tops *	Braille alphabet
	Thin mats **	Eight (six minimum) long strings **	
	Twelve handkerchiefs **	Seventeen short cords, about thirty-fifty cm**	
	Trellises or place to tie the ropes.	Six tables **	
	Twenty four water bottles	Six water glasses	
Outdoor Track	Six braille alphabet	Braille cards with letters form a word: six groups of six.	
	One sound ball (Beep ball) **	Three Base sound (Beep base) **	
	Seven sound balls (with bells)	One tape bells**	
	Eighteen sticks **	Two whirling or another sound element	
	Special tape	Sixty one different coins	

Table 16. School facilities, equipment and documentation.

* These are booked if students fail.

** There are other options to replace them.

5.3.7 Complementary and extracurricular activities

5.3.7.1. Design an audiobook.

We establish it as an interdisciplinary activity with the Department of Technology and Spanish language. Students hear some audiobook, for example, The Greatest Salesman in the World[3].

In coordination with the Department of Spanish Language, students select a text for an audiobook. They can select books for "reading plan" and to use Audacity[4]. Then, students will record audio dramanaatising a chapter text, as commercial audiobooks.

5.4 Quality management

5.4.1. Self-appraisal

This part gives a special meaning to our practice as a teacher. For this case, we should perform an anecdotal record of the student´s behaviour and a subjective assessment of it.

Additionally, we have to reflect on our rubric questioning some aspects such as the understanding (place behaviours in only one category), exclusiveness (to distribute also executions) and hierarchically (most difficult performances have a better evaluation.

5.4.2. Innovation

This teaching unit is an innovation project which aims to introduce awareness to those struggling students using cooperative learning techniques. In the first year, all groups of the same level develop it. In subsequent school years, we will revise this work and "if I were... II (physical disabilities)", to establish a unit-raising to take place in each course.

We have adapted most of the activities from other elaborated units, so the self-evaluation process is essential to determine future proposals and improvement.

[3] If the link does not work, click here https://www.ivoox.com/podcast-vendedor-mas-grande-del-mundo-pergaminos_sq_f1142510_1.html
[4] If the link does not work, click here https://www.audacityteam.org

5.5 Lessons planning

We have developed a didactic unit of 4 lessons. Each one has different goals (teaching and learning) and the timing of activities. Regarding this, a typical physical education lesson is divided into three parts: warm-up (including the introduction), the central part and cool down.

The warm-up is used to exercise the parts of the body which we work during the lesson. In this part, we will explain to the students about the content of the lesson. Concerning the central part, pupils will have to practise every activity scheduled on time. Moreover, finally, the cooldown is used to do flexibility exercises of the main muscle groups and pooling about the lesson.

Also, we have to take into account that every lesson lasts about 50 minutes, so the organisation should be prepared. Having established these conditions, we will follow this structure for our unit.

5.5.1. Lesson I: If I were blind

- **Goals:**
  - **Teaching**:
    - ✓ To sensitise students to visual and motor impairment and to show the advantages of being blind through cooperative learning techniques.
    - ✓ To establish behaviour standards in the use of the resource to limit the vision, the role of guide and viewer.
  - **Learning:**
    - ✓ To know the main difficulties which a visually impaired children face in their practice.
    - ✓ To gain confidence helping to his partner.

- **Timing:**

1. **Introduction and warm-up (20 minutes).**

To start with this first lesson, we will revise students who watched the video about making a mask, and he/she made one. Each one of these students will get a mark according to the evaluation criteria and pupils who do not have it, the teacher will provide them with one provisionally. In the next lesson, he/she will have to have made one and wear it. Also, the professor will set a deadline to hand in the optional activity (audiobook).

Later, the educator will establish through jigsaw methodology (peer-tutoring) the guides who will work with blind classmates. Each lesson, the distribution will change so that each student experience every role.

Knowing the learners their roles, they will start the warm-up with the first exercise, called school visit. They will be organised in groups of 6. From the gym to the rest of school facilities, a student guides verbally to another to familiarise with this reality. Ideally, the blind student uses a stick (PVC pipe), and the guide only warn of possible dangers.

The second exercise will be relays, where two couples (or three) of a team are united to run a race led by a rope with two handkerchief brands to separate them.

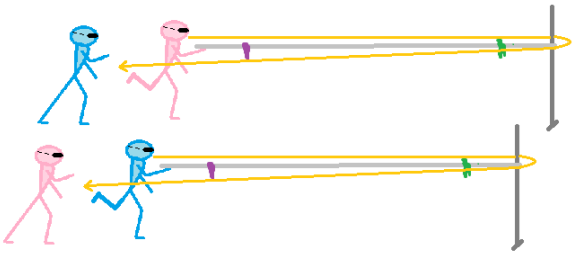

Figure 2. Relays. Taken from www.tafadycursos.com

2. **The central part (25 minutes)**

The same groups will be distributed following station work methodology in 5 exercises (30 students in total). Every team will practise at a different station. Then, every 5 minutes, each group will change to the next exercise:

Dressing. A captain of each time mixes the clothes of his/her group. At the signal, the blind from the group runs to this pile of clothes, looking to touch his/her garment. When it is found, this returns to the group giving the relay to the next.

Dressing II. In this exercise, it is the captain himself who puts clothes as he/she considers optimal to minimise the time spent.

To eat'. We organise a table with three bottles full of water; the student must locate the water and fill a glass. Then, he/she will turn to the group, and it will have to fill it. Finally, the glass with less water will loose.

To read'. On the table, each member must put a different object that identifies (for instance o´clock, pencil sharpener, eraser, pencil,). Under each object, we place a card with a letter in braille. Having established this disposition, we will form the relay, where every student 'palpates' a card and returns to the group. The person who deciphers it first, it will win.

Count money. We will distribute ten different coins on the table. Each student will have to count the total of existing money. In the end, they should write the total on a sheet.

3. **Cooldown:**

During this phase, the pupils will stretch softly, and they will reflect on the session with their classmates and the professor. Finally, the teacher will give instructions about student notebook activities.

5.5.2. Lesson II: Physical Activity sightless

- **Goals:**
    - **Learning:**
    - ✓ To know funny motor games with cooperative learning techniques and using the loss of vision.
    - ✓ To accept the help of a partner and how to help.
    - ✓ To structure space by sound and tactile stimulus.

- **Timing:**

1. **Introduction and warm-up (10 minutes).**

During the student´s reception, they will leave notebook activities on teacher´s desk. The professor will also revise that every student brings the mask. Through jigsaw methodology, the professor explains to different classmates the most critical aspects to take into account to be a guide. Once organised this, they will perform cardiovascular activation phase with a student 'blind' and another guiding it.

2. **Central part (30 minutes)**

The central part will be divided into two parts. In the first, students will perform different popular games without vision, depending on material resources and later, pupils will be initiated in goalball.

We will start popular games without games with "**wolf and sheeps**". All students move on fours in a delimited area (if it is possible to use mats). When the wolf (the blind) howls, all sheep must bleat so that it can be oriented. When the wolf catch one, if he/she identifies it, it wins and elects the new wolf; otherwise, the sheep can choose to it.

Then we will continue with the game **"What is this?"** (Groups 6 students). The 'blind' stay away from the group. On some mats, colleagues will be performing a static artistic composition. The blind will touch every statue, and he/she must guesses what it touches. At that moment, the student takes off the mask to check it.

When it is completed, we will start with the initiation in goalball. Goalball balls can be self-built with old balls and bells[5]. The cheapest option is to use a plastic bag and insert the ball in it (it would be to develop an interdisciplinary activity with the Technology department to make before this lesson).

An easy game to start with any initiation with collective sport is "rondo". A student without vision in the centre of a surface bounded by peers when the guide says 'Where?'

[5] If the link does not work, click here https://www.youtube.com/watch?v=ww4rlkUqwcc

All colleagues clap their hands. After that, the guide indicates 'release' and peers roll the ball, trying to intercept the central student.

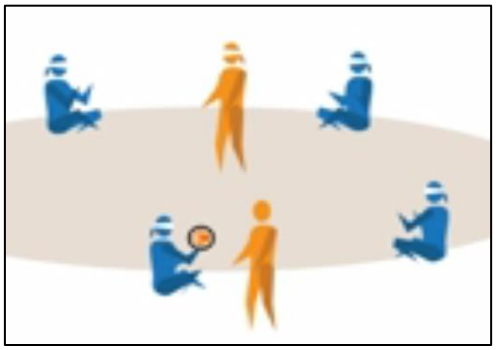

Figure 3. Initiation to goalball. Rondo[6].

A student passes, and another tries to receive. Each student has a companion guide to avoid interference between groups[7]. If the blind intercept the ball, the roles would change.

3. Cooldown (10 minutes)

During this phase, the pupils will stretch softly, and they will reflect on the session with their classmates and the professor. Finally, the teacher will give instructions about student notebook activities.

5.5.3. Lesson III: Introduction to Goalball / Blind Baseball

In lessons III and IV, we will divide the group into two halves in the primary phase. Half will play in the gym Goalball, the other half in the outer blind baseball.

[6] If the link does not work, click here https://www.youtube.com/watch?v=qaySvIKeZpg&feature=youtu.be

[7] If the link does not work, click here https://playsport.net/activity/goalball

- **Goals:**

  - **Learning:**

    - ✓ Idem above.
    - ✓ To learn specific sports for visual impairment children.

- **Timing:**

1. Introduction and warm-up (10 minutes):

During the student´s reception, they will leave notebook activities on teacher´s desk. The professor will also revise that every student brings the mask. Through jigsaw methodology, the professor explains to different classmates the essential aspects to take into account to be a guide. In this occasion, we divide the group into two halves for these activities: goalball (at the gym) and beep-baseball (at the court).

Once established this, students will perform cardiovascular activation phase playing "catch-backwards". In the gym, everybody with a mask and one carrying a ribbon with bells. Blind students try to catch the student with squeaker.

2. Central part (30 minutes):

In the gym, we organised a league with at least one resting group, which act as guides and referees. For example, for five groups - 15 students-: two fields. With this organization, each team will play four matches, and they will "rest one" during these two lessons. For instance, for group one (green rectangle), they will work as referees and guides in the first game, and they will play the rest.

Each team will have ten pitches to try to score (three per student plus one free). In the case of a draw, pupils will throw one penalty per person (3 in total).

1			2			3			4			5	
2	5		3	1		4	2		5	3		1	4
3	4		4	5		5	1		1	2		2	3

Figure 4. Students distribution. Own elaboration.

The other half of the group play Beep Baseball[8]. We should make the following adjustments to play correctly at the school:

Beep base. We place an attacker without mask and whistle (or ratchet - more hygienic) placed on the base. When the partner starts to whistle, it should punt or move the ratchet so that it can locate the base.

Beep ball. We use a "beep ball", a ball with jingle bells; in defence, when the ball stops rolling, start shaking your hands until he/she releases it.

Bat. If it does not have bat or students have difficulty detecting the balloons, we can use a shovel or practise Indian baseball, where the 'hitter' takes a kick on the ball.

3. Cooldown (10 minutes):

During this phase, the pupils will stretch softly, and they will reflect on the session with their classmates and the professor. Finally, the teacher will give instructions about student notebook activities.

5.5.4. Lesson IV: Introduction to Goalball / Blind Baseball

- **Goals:**
  - **Learning:**
    - ✓ Idem above.

[8] If the link does not work, click here https://www.youtube.com/watch?v=DCZV-oN8OJQ

- ✓ To learn specific sports for visual impairment children.

- **Timing:**

1. Introduction and warm-up (10 minutes)

During the student´s reception, they will leave notebook activities on teacher´s desk. The professor will also revise that every student brings the mask. Once established, we perform another game. In the gym, we put obstacles (for example, mats). The teacher stands at different points, and it will organise different trains with various obstacles. A train is a chain of students with hands placed on the shoulders, all blindfolded. The last train that guides, it will make signals with the hands (without speaking).

2. Central part (30 minutes)

In lessons III and IV, we divide the group into two halves in the primary phase. Half will play in the gym Goalball, the other half in the outer to play baseball.

3. Cooldown (10 minutes)

During this phase, the pupils will stretch softly, and they will reflect on the difficulties experienced with visual impairment. Finally, the teacher will give instructions about completing the final student notebook activities.

6. CONCLUSION

Since the curriculum in the current education system brings significant limitation for students with visual problems, measures must be taken to provide adaptive curriculum for children with visual impairment (Shainali, Mnjokara & Thinguri, 2014). We will not be able to get quality and modern education unless we cater to the particularities of every pupil in the class.

“It is necessary to develop specific competencies required for working with children with disabilities in PE classes, during the process of students' preparation for future educational work” (Orlic et al., 2016:132). It is one of the problems which we have detected in our investigation. Teachers´ training should be better in this aspect because they do not have adequate knowledge about how to act in any circumstance related to these type of students.

To achieve this, we should tailor preparation programme and elaborate inclusive documents to establish a curriculum that is adapted to the needs (activities, sequences, materials, types of sport) of learners with disabilities because teachers who favour inclusive sport cannot reduce the level of motor requirements.

This implementation of inclusive practices proves to be valid for students with and without disabilities. It is possible to create a conscience where we do not separate sport or activities for students with and without incapacities. Both can practise them all. Pupils will be able to perceive a wide range of possibilities of practice and the most critical aspect; every student will enjoy each other without barriers.

Similarly, educators´ predisposition has to change substantially. They should reflect on the opportunity to improve their work with their pupils in general and disabled ones in particular. These children must feel integrated, and professors´ reservation due to a lack of previous training should finish.

Within cooperative learning, we could use various techniques, such as jigsaw and station work, so that students, whether visually impaired or not, can practise different modalities of adapted physical activity or sport. Related to this concern, we have detected that individual activities could also work with this kind of students (they know its role and follow their progression). It is because there is not a comparison of their results with the rest of their classmates.

Indeed, it could be the first step in this process, but the main goal must be to maintain social relationships among students, working and learning from every classmate. Because of this, a collective and adapted sport as goalball with a cooperate learning methodology could be a fantastic manner to integrate our students to physical education class.

Consequently, “third pedagogical time” (it complements physical education lessons in schools) will also help them to reduce their levels of inactivity during childhood.

In conclusion, quality education seeks integration and adaptation to all our students' needs, independently of their characteristics. Giving opportunities so that every pupil can choose and enjoy every moment. It could be the most crucial goal of every teacher.

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