International Journal of Research in Education Humanities and Commerce

Volume 06, Issue 05 "September - October 2025"

ISSN 2583-0333

DIGITAL BOCCIA!!! A DIDACTIC PROPOSAL UTILIZING INFORMATION AND COMMUNICATION TECHNOLOGIES

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https://doi.org/10.37602/IJREHC.2025.6505

ABSTRACT

Boccia, a Paralympic sport for athletes with substantial motor skill limitations, is fundamentally characterized by strategic planning and precision. Additionally, it provides a substantial educational resource for learners across all skill levels. The objective is to promote empathy, reinforce equality, and ensure full student participation in collaborative activities within the context of general education. The "Digital Boccia" program's pedagogical design focuses on instructing elementary school students about motor impairments to promote inclusive and equitable physical education. Employing information and communication technologies fosters student participation in cooperative, practical exercises related to Paralympic themes. The innovative proposal utilizes theoretical frameworks, multimedia resources, and interactive activities to improve knowledge, empathy, collaboration, and appreciation for disability. Boccia is an effective pedagogical model for inclusive physical activity, promoting inclusivity and constructive social interaction for students with and without disabilities.

Keywords: Boccia, Physical Education, Paralympic Sports, Disability, Information and Communication Technologies

1.0 INTRODUCTION

Disability represents a multifaceted concept, incorporating physical and cognitive impairments, along with social, cultural, and environmental factors that affect individuals. It is not merely a medical condition; rather, it represents a dynamic interplay between the individual and his/her environment. Developing an inclusive education system demands a comprehension of diverse disabilities. Impairments in mobility create difficulties in ambulation, movement, postural control, and limb functionality. Among the potential etiologies are cerebral palsy, muscular dystrophy, spinal cord injuries, and various neurological disorders. Individuals with mobility impairments frequently utilize assistive technologies, such as wheelchairs, walkers, and orthopedic devices, to promote enhanced autonomy and social integration (Ferreira et al., 2022; Ventura, 2023).

Information and communication technologies (ICT) advancements have significantly affected all educational sectors, which requires a re-evaluation of the instructor's role and pedagogical approaches. ICTs are no longer simply supplementary tools but rather fundamental components in the construction of modern, multimodal, and personalized learning environments, leveraging multimedia, interactive applications, and digital platforms (Collins, 2011; Pérez et al., 2024). The incorporation of technology provides substantial opportunities for transformative

enhancements in physical education, improving accessibility, engagement, and inclusivity beyond the conventional focus on physical activity. The successful integration of students with disabilities requires an immediate modification of Physical Education curriculum.

Boccia is a strategic sport that is inclusively structured to include those with significant motor skill challenges. In an indoor environment, using leather balls, the aim is to get one's ball nearest to the Jack ball. Research indicates that Paralympic sports, inclusive of boccia, have considerable pedagogical value in the enhancement of motor skills and the cultivation of both inclusivity and social empathy (Lieberman, 2016). Boccia, an adapted precision sport, promotes equal opportunities for athletic and social interaction among students with and without disabilities, thereby fostering genuine inclusion in the school environment (Abellán et al., 2018).

The integration of Information and Communication Technology (ICT) into boccia instruction demonstrably enhances comprehension, promotes experiential and multisensory learning, and increases participation among students with severe disabilities through technological interventions (Abellán et al., 2018). In addition, the methodical application of such approaches has been correlated with an enhanced student perspective on disabilities (Abellán et al., 2017), and has also fostered the advancement of social competencies, cognizance, and collaborative efforts (Rezavandzayeri, Suarez, Khortabi & Carral, 2024).

Information and Communication Technologies (ICT) are crucial to this process, enabling connections between Paralympic athletes and general education students. Interactive media, multimedia presentations, and digital tools facilitate experiential learning about disability and its relationship to Paralympic sports among students (Patsi, Nikolaidou & Evaggelinou, 2025). The pedagogical application of video, encompassing presentations and narratives, demonstrably improves learning outcomes and cultivates collaborative and critical thought (Patsi & Evaggelinou, 2022; Patsi, Yfantidou, Antoniou, Gkoraki & Lagiou 2016).

This proposal outlines the introduction of an ICT-enhanced teaching program for sixth-grade primary students, which introduces them to the Paralympic sport of boccia.

Didactic Proposal with the use of ICT

Title:

Digital Boccia!!!

Objects:

Physical Education, English, Greek, Computer Science

Grade:

Elementary School students (Greece)

Duration:

One teaching hour (45 minutes approx.)

Volume 06, Issue 05 "September - October 2025"

ISSN 2583-0333

Purposes:

- Introducing students to Paralympic boccia using technology such as video projection and visual displays.
- Student engagement in an interactive environment and their motivation to participate in diverse activities.

Educational goals:

Following the end of the lesson students should be able to:

Psychomotor skills:

- Acquiring boccia skills.
- Coordination between the eyes and upper limbs.
- Upper limb strength and speed control.
- Developing proficiency in spatial and target perception.
- Enhance their accuracy in target throwing.

Cognitive skills:

- Developing an understanding of the varied requirements and entitlements of individuals with disabilities.
- Cultivating proficiency in the Paralympic sport of boccia.
- Integrating new technologies and practical exercises to create a new teaching method.
- Improve digital skills.

Emotional skills:

- Cultivating empathy, acceptance, cooperation, competition, teamwork, fair play and socialization.
- Equal participation in activities and equal opportunities to gain experience.
- Positive outcomes resulting from interactions.
- Enhancing students' understanding of individuals with disabilities.
- Be responsible for their own learning.

2.0 SHORT DESCRIPTION

Physical infrastructure components:

1. Projector and computers (Google Presentation, YouTube, digital quiz in Wayground platform) for in-class information.
2. Paper tape, ping-pong paddles, chairs, and leather balls (white, red, and blue) will be required for the practical training session in the schoolyard.

Concise overview

Teaching Method:

Volume 06, Issue 05 "September - October 2025"

ISSN 2583-0333

The teaching method to be used will be:

- The command style (during the practical application of the Paralympic sports in the schoolyard, where students will perform the activities taught by the Physical Education teacher).
- The inclusive style (seeking the participation of all students through activity adaptations).
- The guided inventiveness style (which will be applied during the presentation through questions that students will be asked to answer).

Classroom organization:

For the inside the class lesson, students will first gather in the computer laboratory, which has 16 desktop computers and a projector. Following a short lecture on Boccia Paralympic sport, students will watch a Power Point presentation and some videos on YouTube (in English language), showcasing characteristics of Paralympic sports, as well as information on mobility and sensory impairments, to prepare them for the quiz at the end. Students should be focused and show interest while participating in discussions or asking questions to better understand the lesson. Practical training will commence in the schoolyard for the entire class during the final part of the teaching hour. The planned space will recreate the competitive atmosphere of Paralympic events and offer various adapted activities suitable for individuals with disabilities. The Physical Education (PE) teacher will present the basic movements and techniques, which the students perform with appropriate adaptations and through imitation, following the instructions given.

Enhanced educational value of ICT:

The utilization of ICT in PE courses, such as presentations, enhances students' comprehension of boccia and Paralympic sport-related disabilities within the ICT framework. Furthermore, viewing pertinent videos allows students to acquire knowledge of boccia, comprehend its fundamental components, and appreciate the diversity of individuals with disabilities. Interactive digital content and quizzes concurrently introduce ICT concepts and address students' questions. This approach fosters active participation by creating a more engaging and collaborative learning environment, concurrently promoting diverse sporting activities. The utilization of ICT in lesson planning and programming improves teaching time management and increases lesson engagement.

Course requirements

Prior sessions provided a concise overview of disability and inclusion, along with an introduction to the digital learning environment (digital quiz) in preparation for subsequent activities.

Activities/ Teaching Phases

Phase 1 (1st teaching hour)

Activity 1 –Paralympic sport-Boccia (10΄)

Volume 06, Issue 05 "September - October 2025"

ISSN 2583-0333

At the beginning of the activity, an introductory discussion will be held with the students about the types of disability and the importance of the participation of individuals with disabilities in sports. This will be followed by a presentation on the concept of the Paralympic sport of Boccia. Students receive instruction in the rules, techniques, and performance aspects of the sport through visual media, discussions, and video presentations (In English language).

The presentation will be followed by class discussion and questions, so that students can express their questions and actively interact with the content.

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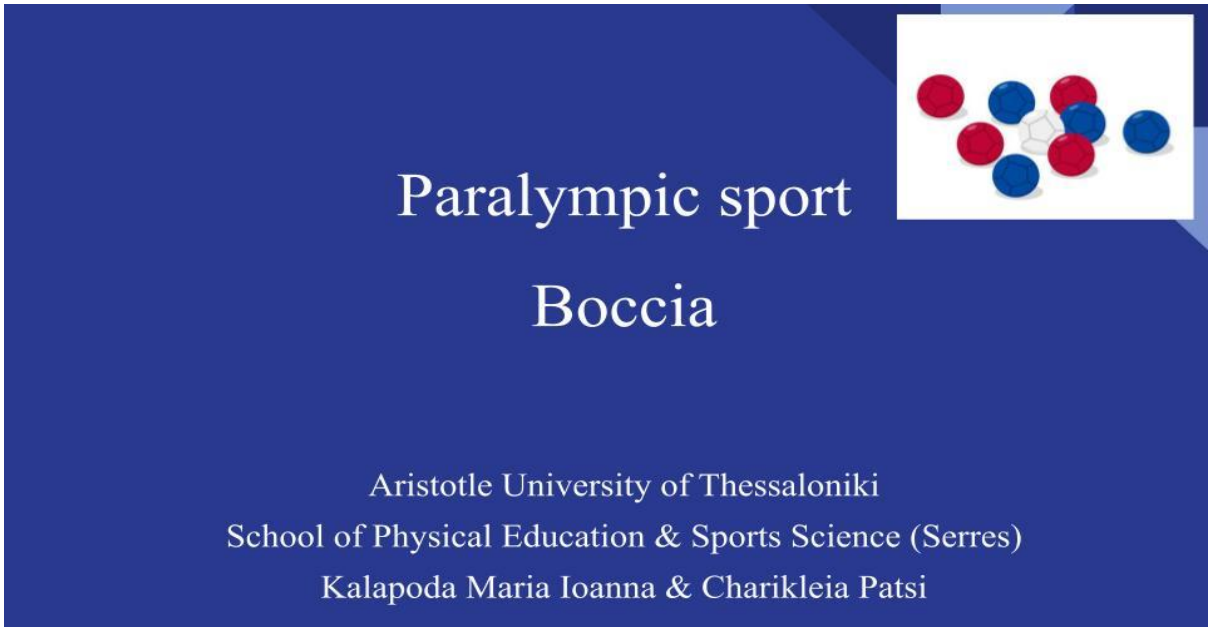
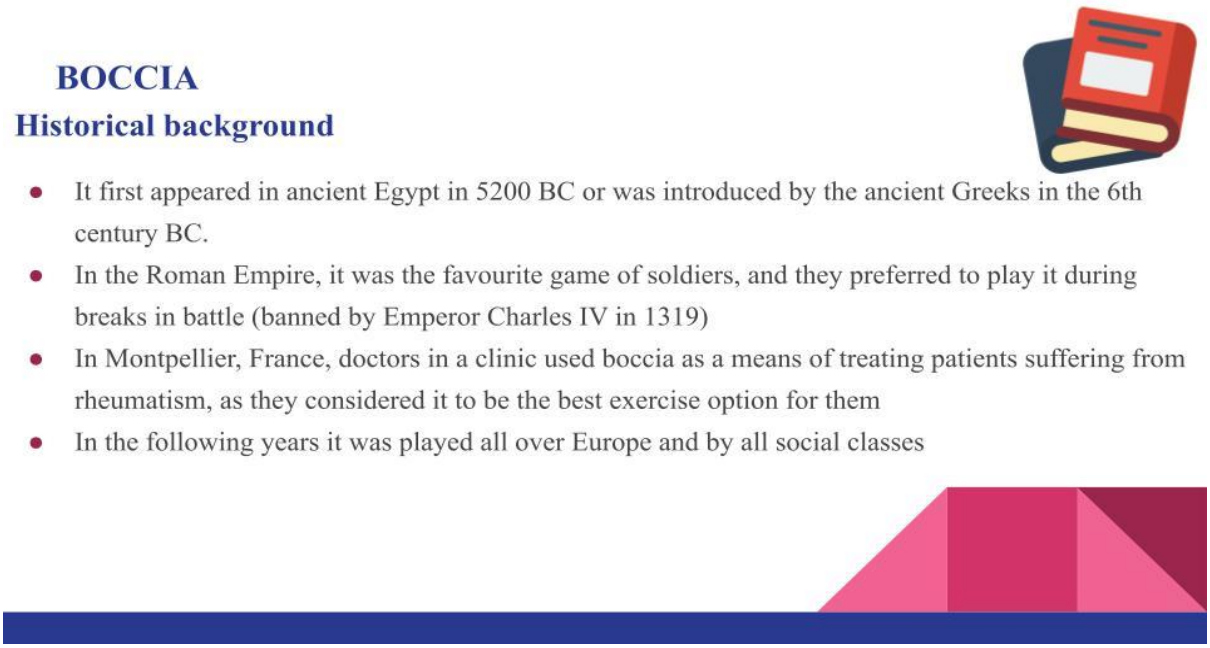




BOCCIA

What is boccia?

- Boccia is a competitive, Paralympic sport in which athletes who belong to the category of individuals with disabilities can participate, provided that they use a wheelchair.
  1. Athletes with cerebral palsy
  2. Athletes with mobility problems
  3. Athletes with amputation

BOCCIA

Categories

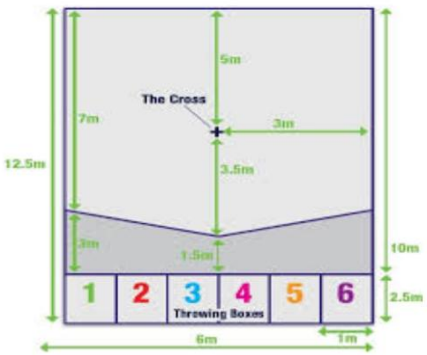
BC1: Athletes throw the ball with hand or foot, assistant passes the ball, stabilizes and adjusts the wheelchair

BC2: Athletes throw the ball by hand, no assistant, **cerebral palsy**

BC3: Athletes throw the ball with assistant and assistive device (ramps).

BC4: Athletes throw the ball by hand, no assistant, **muscular dystrophy, myopathy**

BOCCIA



Facilities

- Boccia is played on a flat surface available in indoor gyms
- The dimensions of the court are 12.5 m long and 6 m wide
- It is divided into 6 designed "boxes", the V line and a cross

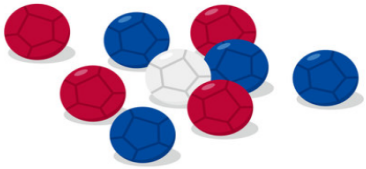
Volume 06, Issue 05 "September - October 2025"

ISSN 2583-0333

BOCCIA

How is boccia played?

- Boccia is played with a white ball, called Jack, which is the **STOCK** of the game
- Balls are divided into two main colours, **blue** and **red**



BOCCIA

How is boccia played?

- Conducting a draw to select the colour of balls
- The player with the red balls, playing in "box" number 3, will throw the white ball in the 1st and 3rd set
- The player with the blue balls plays in box number 4 and will throw the white ball in the 2nd and 4th sets

BOCCIA

How is boccia played?

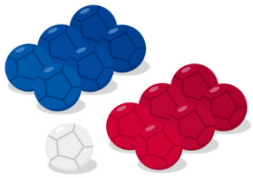
- Each set starts with the throwing of the cue ball
- The aim is for the player to bring his balls as close to the white ball as possible
- The winner is the player who scores the most points in the 4 sets (with the exception of the team game, which consists of 6 sets)

- **https://www.youtube.com/watch?v=itPWqcx7xBg**

BOCCIA

The duration of events varies based on the category.

- One-on-one, men-women (individual)
- Two against two (pairs)
- Three against three (team event)



BC1: 4,5′, per athlete, per set

BC2: 3.5′, per athlete, per set

BC3: 6′, per athlete, per set

BC4: 3,5′, per athlete, per set

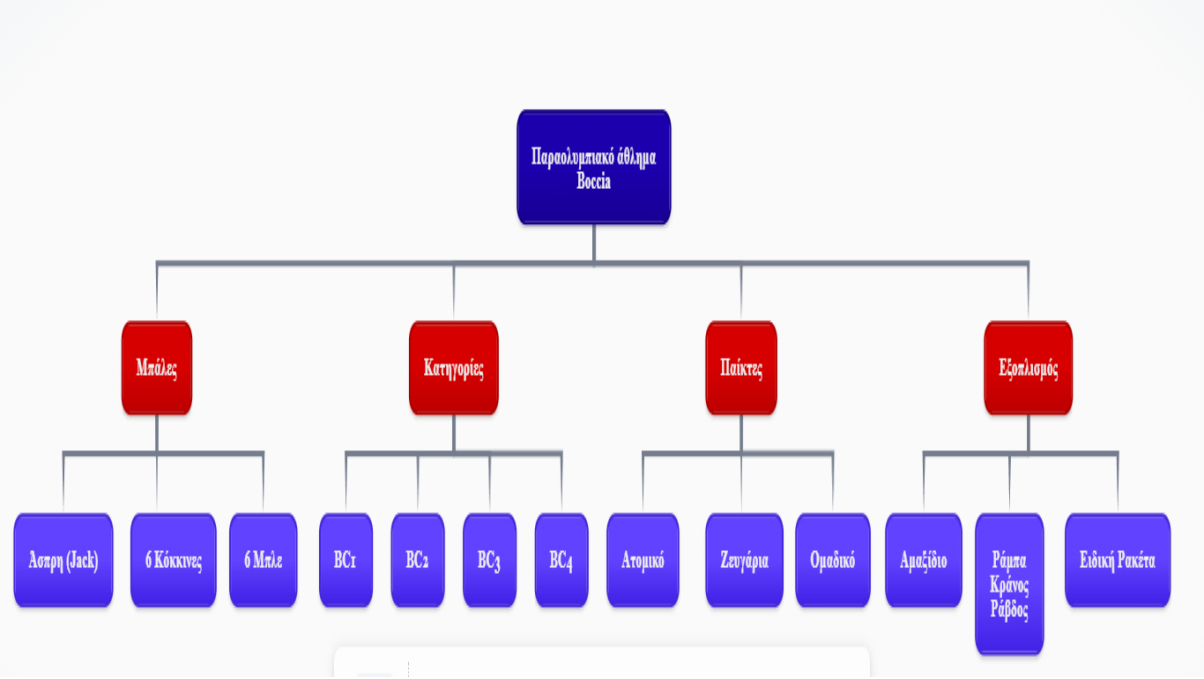
Teams: 6′, per Team, per set

Pairs BC3: 7′, per Pair, per set

Couples BC4: 5′, per Couple, per set

Activity 2 (10′):

Information concerning Boccia will be presented to students in the following mind map. The appended link offers a conceptual outline of the pedagogical objective, emphasizing key concepts and terminology pertinent to the sport of boccia. Key concepts are interconnected yet distinct, forming a hierarchical structure. Through the correlation of relevant concepts, students ascertain the prerequisites for the sport's existence, leading to a more profound understanding. https://go.bubbl.us/e9b767/2fe9?/Boccia (In Greek language).



Volume 06, Issue 05 "September - October 2025"

ISSN 2583-0333

Activity 3 (10΄):

The initial video serves as an effective introduction to boccia and its significance within the Paris 2024 Paralympic Games. More specifically, it focuses on the equipment used in the sport, such as leather balls and specially designed ramps, the categories of athletes, depending on the level of disability and support needs, the basic rules of the game, the scoring system and the forms of competition.

https://www.youtube.com/watch?v=D4oMZ006Gos

A video presentation of boccia from the Tokyo 2020 Paralympic Games will be shown to students. Students will acquire a realistic understanding of the experiences of high-performing athletes with diverse disabilities.

https://www.youtube.com/watch?v=rKw9kavRFbU

The viewing of a video highlighting the achievements and emotional expressions of athletes competing in the Tokyo 2020 Paralympic Games is assigned to the students.

https://www.youtube.com/watch?v=Don5rBusXMU

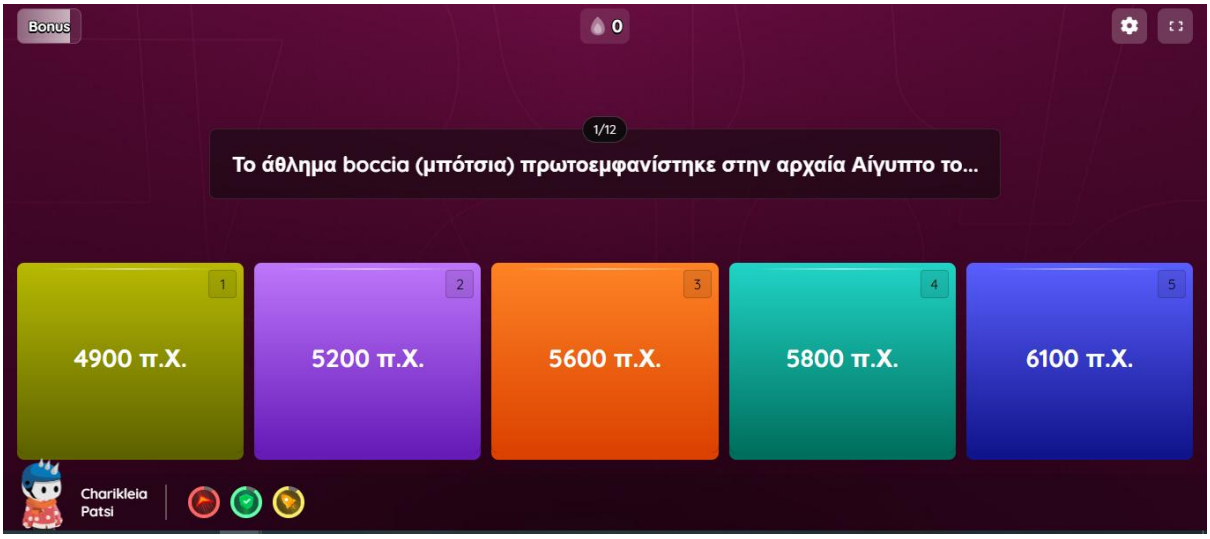
Footage from the 2018 World Boccia Championships in Liverpool comprises the fourth video, which displays impactful throws from boccia players across diverse classifications, demonstrating their crucial role in determining match results.

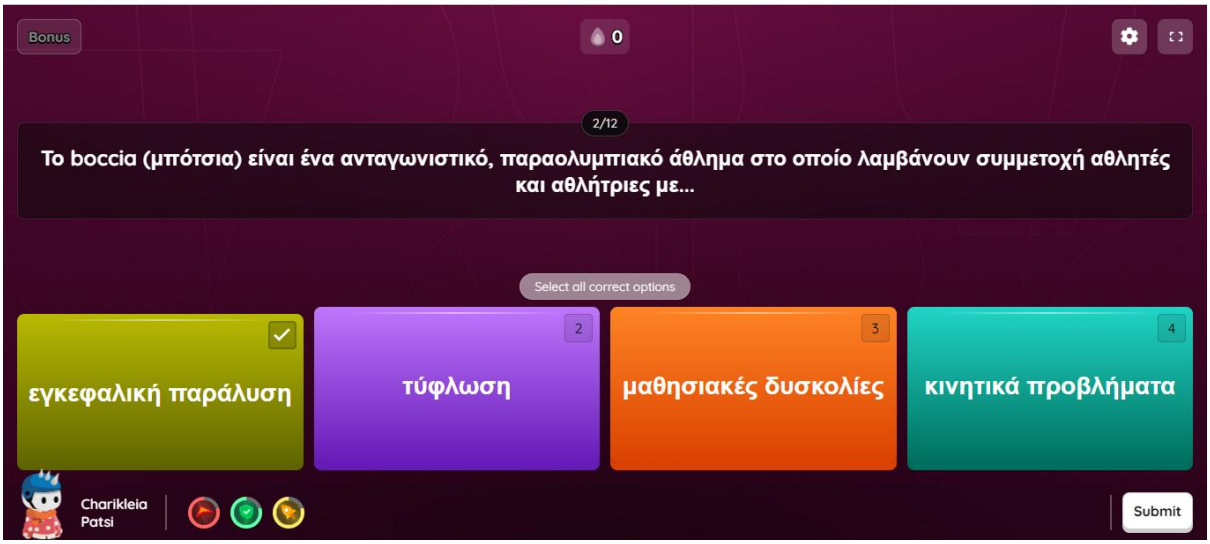
https://www.youtube.com/watch?v=yD5fdJh5MSw

Activity 4 (5΄):

The digital assessment quiz, in Greek and administered through the Wayground platform, is accessible to students at the specified web address.

https://wayground.com/join/quiz/6819fc8bc450857a76dedc1f/start?studentShare=true





Activity 5 (10΄):

Students reenacted the procedures illustrated in the preceding videos.

Utilizing paper tape to establish boccia courts, students will engage in team-based games in groups of three. Students should be emphatically reminded to not lift their pelvises off the chair and to ensure their chairs and legs do not cross the designated boundaries of the playing area. To promote problem-solving (e.g., determining the nearest ball to the cue ball) and to ensure proper gameplay, students will be reminded of fundamental game rules.

Expansions

Students who have received prior instruction in boccia through the school are considered qualified instructors. In addition, boccia's inclusion in collaborative school initiatives is achievable, including participation in events such as World Disability Day, volunteering during school Paralympic Days, or by inviting boccia athletes for demonstrations.

3.0 CONCLUSIONS

The incorporation of ICT into Physical Education courses substantially aids in modernizing pedagogical practices, thereby promoting enhanced accessibility, interactivity, and inclusivity. Incorporating multimedia, digital tools, and applications contributes to improved multimodal and experiential learning. Boccia, a Paralympic sport, demonstrates the pedagogical efficacy of ICT via fostering social empathy, respect for diversity, and inclusive student involvement. In addition, it encourages the development of social aptitudes and constructive perspectives on disability, which in turn supports inclusive schooling. A key element of education is to introduce students to boccia, its regulations, and its connection to the Paralympics. The physical education curriculum incorporates a unit on alternative sports to expand pupils' comprehension of varied athletic pursuits and impairments, thereby cultivating empathy and promoting inclusivity.

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