“DIDACTICS OF PHYSICAL EDUCATION IN PRIMARY TEACHING”

Department of Didactics of Physical, Artistic and Music Education

University of Valencia

Teresa Valverde Esteve

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The information in this document is addressed to the students of the course of Didactics of Physical Education in Primary Teaching, which is taught in a foreign language as a part of the Content Language Integrated Learning method with the aim being to help them and guide them during the course. Please, feel free to contact me for more information: teresa.valverde@uv.es.

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1. Overview of the Didactics of Physical Education in Primary Teaching course

This didactic program for the course of Didactics of Physical Education in Primary Teaching through using the content and language integrated learning (CLIL) approach. For this reason, a specific section is included here to describe this approach, followed by a description of the skills and competencies, learning outcomes, contents, pedagogical models, methodological strategies and didactic resources.

1.1 How is the course taught?

The Didactics of Physical Education in Primary Teaching course requires a total of 150 hours' work, 60 of which are of a theoretical and practical nature, requiring 100% in-person attendance. The remaining 90 hours correspond to students' autonomous study activities. In-person activities therefore equate to 40% of this time, and other activities 60%. The course guide specifies the characteristics of the in-person activities as follows:

- *In-person lectures*. These classroom-based sessions will focus on theoretical and practical activities including the presentation and exploration of the different topics by the professor,. We will also work in groups, where the students will debate and present the work they have done. Also, during these lectures, we will scaffold, develop and add to the range of topics.
- *Gym-classroom sessions*. More practical sessions will also be taught by the professor, including the different contents of motor education and how to teach these, with students also preparing, individually and in groups, presentations and their own practical sessions. Thus, we will employ different participatory techniques and group dynamics, including simulated PE classes, using a range of teaching materials and ICT.
- *Week of complementary activities*. Students will have to attend the activities programmed by the department and will be guided by the teaching staff to complement their training with multi- and interdisciplinary activities.

The remaining 60% of course time concerns the students' autonomous study activities, including preparation of course assignments. Students will need to formulate relevant questions, and search for, analyze, synthesize, and present information. As part of these autonomous study activities, students must also attend tutorials scheduled by teachers to enable more personalized monitoring of their learning.

The distribution of content is flexible, especially as a result of the adaptation of the sessions to blended learning due to the COVID-19 pandemic. Likewise, many of the topics are worked using project-based learning, integrating the contents with different methodologies.

1.2. ASSESSMENT

In the course, students may be assessed through individual and/or group work. The tasks to be carried out may be related to theoretical or practical course content, or both. This type of work includes the creation of teaching units, presentations, personal and group reflections, etc.

In this teaching proposal, the course uses modern teaching methods, including the flipped classroom, the use of group work and requiring students to give presentations. Deadlines are set for students to submit concept maps, individual and group work and life stories via the virtual platform, and this work is then graded. Figure 1 show an example of the submission of assignments on the course platform.

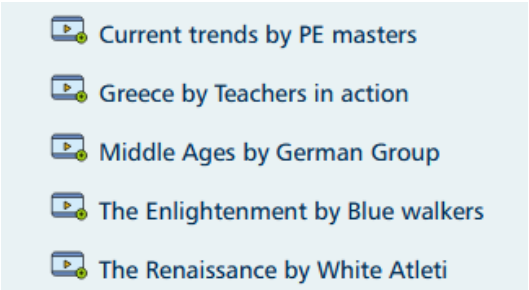

Figure 1. Submission of multimedia tasks via the Moodle platform for the course.

As detailed in the course guide, there are three types of assessment itineraries, to suit student attendance (Table 1).

TABLE 1. Assessment itineraries to suit student attendance.

<table>
<tr><th>Itinerary</th><th colspan="2">Percentages of value with respect to the total grade</th><th>Activities</th><th>Evaluation type</th></tr>
<tr><td rowspan="4">In person</td><td colspan="2">40%</td><td>Work inside and outside the classroom (group and individual)</td><td>Professor + peer assessment + self-assessment</td></tr>
<tr><td rowspan="2">40%</td><td>20% written</td><td rowspan="2">Design and presentation of a teaching unit (6-10 sessions)</td><td>Professor</td></tr>
<tr><td>20% oral presentation</td><td>Professor + peer assessment + self-assessment</td></tr>
<tr><td colspan="2">20%</td><td>Final exam</td><td>Professor</td></tr>
<tr><td rowspan="3">Partial attendance (mixed itinerary)</td><td rowspan="2">40%</td><td>20% written</td><td rowspan="2">Design and presentation of a teaching unit (6-10 sessions)</td><td>Professor</td></tr>
<tr><td>20% oral presentation</td><td>Professor + peer assessment + self-assessment</td></tr>
<tr><td colspan="2">60%</td><td>Final exam</td><td>Professor</td></tr>
<tr><td>Non-face-to-face itinerary</td><td colspan="2">100%</td><td>Final exam</td><td>Professor</td></tr>
</table>

Note: in face-to-face activities, we encourage the students' active participation, implementing cooperative work strategies, such as the performance of roles within the groups.

As shown in Table 1, assessment activities are shared between the professors and the students, with students assessing each other, i.e. engaging in peer assessment, with the professor's guidance. The presentation of the teaching unit will correspond to 20% of the final grade for the course, both in the face-to-face and mixed itineraries, and the students already know what the grading rubrics will be for this at the beginning of the academic year. These grading rubrics (ANNEX IV) include self-assessment as part of group assessment.

The grading rubric is a descriptive scale used in formative assessment. As Cano (2015) has pointed out, one of its benefits is that it students are provided with guidance by being assessed, facilitating the attainment of the learning objectives. Traditionally, students have regard this positively because it allows them to be aware of the criteria that contribute to their "grade", which in turn encourages them to use it in their career as teachers (López-Pastor et al., 2016; Schafer et al., 2001; Andrade & Du, 2005). For this reason, authors such as Sáiz et al. (2012) recommend informing and involving students in the assessment process and systematizing assessment activities.

The only activities exclusively assessed by the professor during the student assessment process are:

- The written group assignment for the design and presentation of a teaching unit, for which the criteria shown in the rubric of ANNEX III are applied.
- The final exam for the course, in the three assessment itineraries.

Peer assessment, therefore, is present in the in-person and mixed itineraries, being used for the work carried out inside and outside the classroom and students' oral presentations, democratizing the assessment process (Salazar, 2008) and generating constructive feedback, by teachers and students.

It should be noted that, in the assessment of work carried out inside and outside the classroom, the monitoring and evaluation is a formative process, meaning that students can resolve any doubts they may have had during the preparation of the work.

During the final course lecture, students can ask any questions they may have about the course or which have arisen while studying. The activity "Physical Education and myself" will also take place, in which the students are asked to individually reflect on positive aspects of the course and those elements of it which have aroused their curiosity. The students also complete an anonymous survey regarding the professor's performance, via a link on the course platform. This enables the professors to consider improvements to the course.

Summarizing the assessment process and using the classification of Hamodi et al. (2015), assessment evidence is collected via: 1) student output, 2) information collection techniques employed by the professor and 3) the instruments that the

professor and students use to assess the students (Table 2). Table 3 shows the specific contents that are presented throughout the course.

TABLE 2. Media, techniques and assessment instruments used in the Physical Education course (adapted from Hamodi et al., 2015).

Media	Written texts	Teaching unit: written presentation (15%) Written test (20%)
	Oral	Teaching unit: oral presentation (10%)
	Practical	Projects including role-playing (40%)
Techniques	Observations	Self-assessment (5%) Peer assessment (10%)
Instruments	Rubric for self-assessment and peer assessment	

TABLE 3. Thematic Units and their contents for the "Didactics of Physical Education in Primary Teaching" course

Thematic unit I: PHYSICAL EDUCATION AND ITS EDUCATIONAL VALUE	
	a) Identity and concept of Physical Education.
	b) Physical Education and its educational value.
Thematic unit II: HISTORICAL DEVELOPMENT AND TRENDS IN PHYSICAL EDUCATION	
	a) Brief historical tour.
	b) Currents in Physical Education.
Thematic unit III: THE CURRICULUM OF PHYSICAL EDUCATION IN PRIMARY EDUCATION	
	a) Concept and general characteristics.
	b) Elements of the curriculum.
	c) Presence and importance of content blocks in the different educational cycles.
Thematic unit IV: TEACHING PHYSICAL EDUCATION	
	a) Organization and teaching resources.
	b) Teaching styles and pedagogical models.
	c) Tasks and progression.
	d) The use of new ICT technologies.
Thematic unit V: PLANNING IN PHYSICAL EDUCATION	
	a) Classroom planning: the session.
	b) The assessment.
	c) Curriculum adaptations.
	d) Presentation of the planning carried out by the students: observation and reflective-critical analysis.
Thematic unit VI: TEACHING AND LEARNING OF THE DIFFERENT BLOCKS OF CONTENT OF PHYSICAL EDUCATION IN PRIMARY EDUCATION	
	Block 1. Body knowledge and autonomy.
	Block 2. Motor skills, coordination and balance. Activities in the natural environment.
	Block 3. Corporal expression and communication.
	Block 4. Physical activity and health.
	Block 5. Games and sports activities.

Note. ICT: Information and Communication Technologies. Source: course guide of all the groups of Didactics of Physical Education in Primary Teaching. http://www.uv.es/magisterio (accessed on 09/15/2023).

The Didactics of Physical Education in Primary Teaching course is taught using the Content and Language Integrated Learning (CLIL) method and so the course content is structured around the 4 Cs of learning: content, communication, cognition and culture.

1.3. CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL)[1]

Over the last two decades, Spain has massively adopted Content and Language Integrated Learning (CLIL) programs to respond to the multilingualism objectives of the European Union (Custodio, 2019). However, its rapid expansion has outpaced the supply of teachers capable of meeting the challenge of adopting such pedagogical approaches (Pérez-Cañado, 2016). This makes CLIL teacher training essential (Estrada & Otto, 2019), and a learning-practice approach can be employed so that future teachers can experience CLIL and connect learning and practice while reflecting, articulating, and exploring how they can put their learning into practice.

1.4. THE DIDACTICS OF PHYSICAL EDUCATION IN PRIMARY TEACHING COURSE

This course is mandatory and forms part of the second year of the Primary Education degree. However, the students of this degree are able to choose whether they want to study the course in Spanish, Valencian or English. In any case, the course content is always the same: physical education and its educational value, the historical development of and trends in physical education, the physical education curriculum in primary education, the elements included in the teaching of physical education, planning in physical education, as well as the teaching and learning of the different content blocks of physical education in primary schools. A wide variety of active learning methods are used during the course, with a learning practice approach (Strom & Viesca, 2021) being used, as future teachers must teach their peers through experiential learning and embodied cognition (Wilson, 2002). In other words, students 'learn by doing' (Dewey, 1938), since throughout the course they act as teachers and students,

[1]The information collected in this section has been extracted from Valverde-Esteve, T., Salvador-García, C., & Ruiz-Madrid, MN (2023). Teaching Physical Education Through English: Promoting Pre-Service Teachers Effective Personality Through a Learning-Practice Approach. In Estrada & Zayas (coord).*Handbook of Research on Training Teachers for Bilingual Education in Primary Schools* (pp. 237-257). IGI Global.

and they are required to reflect critically on their practices and find ways to improve them.

One of the essential characteristics of the course in its English version is the fact that the trainee teachers must develop sessions and give presentations in the English language, encouraging them to improve their communication skills in English (Villabona & Cenoz, 2022). For example, among other tasks, future teachers must design and implement a teaching unit aimed at primary school children using CLIL. The unit must be based on the 4 Cs framework (Coyle, et al., 2010) and consider how to properly use and incorporate a language that the children are expected to master. This means that they must think about how to develop the following:

- *Content,* based on the students' prior knowledge and seeking to promote meaningful learning.
- *Cognition*, developing different ways of thinking or innovative approaches to achieve successful strategies that best adapt to the students' needs.
- *Communication*, acquiring new ways of interacting through verbal and non-verbal strategies and adapting to different practical and theoretical situations.
- *Culture*, moving towards a multicultural understanding amongst home and international students and of their different backgrounds.

In this way, the teacher guides the students following the CLIL pyramid (Meyer, 2010), playing the roles shown in Table 4.

TABLE 4. Progression of the CLIL pyramid and roles of teachers and students.

Phase	**Role of the teacher during sessions 1-21**	**Role of the students during sessions 22-29**
1st: *selection of the topic*	The teacher asks the students about their training in physical activity and sports to design the progression of tasks and content that best adapts to their needs during the course.	During the last sessions, the students decide which topic they want to design their teaching unit for.

2nd: *choice of media*	The teacher creates different materials and resources available to students to promote active methodologies.	The students provide their classmates with the necessary materials and resources, in accordance with the theme of the teaching unit.
3rd: *task design*	The teacher starts from lower-order thinking skills (remember, understand, apply), moving towards higher-order thinking skills (analyze, evaluate, create).	Students apply basic lower-order reasoning during the theoretical part of their presentations, moving towards higher-order thinking during the practical part, especially during the assessment.
4th: *implementation of CLIL*		

Meyer (2010) introduces seven principles aimed at achieving a successful implementation of CLIL (Content and Language Integrated Learning), all of which are relevant to this course, as follows:

1. *Enriching Input*: This involves selecting appropriate materials, such as presentations and videos, to facilitate meaningful foreign language acquisition.
2. *Scaffolding Learning:* To reduce cognitive load, this principle guides the learning process with a supportive structure and specific vocabulary support.
3. *Fostering Rich Interaction and Output*: Providing feedback after interactions is crucial. Authentic communication occurs during communication gaps, which can be categorized as information gaps (transferring information among peers), reasoning gaps (teaching peers or students), and opinion gaps (starting a story with different endings and comparing them).
4. *Incorporating the Inter-cultural Dimension*: Learners gain insights from the cultural backgrounds of their national and international peers, fostering respect during intercultural communication.
5. *Promoting Higher Order Thinking (H.O.T.) Skills:* This involves initiating meaningful input, facilitating authentic communication, encouraging active

student participation in tasks, and achieving complex output that encompasses cross-cultural communication.

6. *Ensuring Sustainable Learning*: The goal is to obtain output that allows for the expression of specific subject content in the second language.

7. *Introducing the CLIL Pyramid*: This pyramid (Topic Selection, Choice of Media, Task Design, and CLIL Workout) is applied once the four Cs are acquired, providing a systematic framework for CLIL implementation:

- Topic Selection forms the base of the pyramid and marks the beginning of the process.

- Choice of Media involves considering learning styles and how second language skills will be developed.

- Task Design indicates which skills will be practiced and how cognition will be integrated into the communication process to promote Higher Order Thinking skills and authentic communication.

- CLIL Workout outlines the steps towards achieving the desired product.

Hence, within the Teaching Physical Education course, the professor guides pre-service teachers in following the CLIL pyramid (Meyer, 2010) while assuming the roles presented in Table 5.

TABLE 5. Progression of the CLIL pyramid showing the roles of the professor and students in teacher training.

Phase	Professor's role	Role of trainee teachers
1st: topic selection	To tailor the course effectively, the instructor inquires about the trainee teachers' background in physical activity and sports, aiming to create a curriculum that aligns with their specific needs and requirements.	The trainee teachers compose essays detailing their encounters with physical education. This allows the instructor to establish a scaffolding process tailored to their individual experiences and needs. Additionally, the future teachers select the topic for which they intend to create a teaching unit during the final sessions of the course.

2nd: choice of media	The instructor supplies the trainee teachers with a variety of materials and resources geared towards fostering active teaching methodologies. These resources may include specialized materials related to physical education and instructional videos.	The prospective teachers share essential materials and resources with their fellow students, aligning these resources with the theme of their respective teaching units. These may include items like PowerPoint presentations and specific materials related to physical education.
3rd: task design	The instructor initiates instruction by focusing on lower-order thinking skills, progressing through stages such as remembering, understanding, and applying concepts. This gradual approach transitions towards higher-order thinking skills like analysis, evaluation, and creation. This ensures that the trainee teachers attain meaningful learning through the scaffolding process.	The prospective teachers employ fundamental lower-order thinking skills during the theoretical segment of their presentations, and as they transition into the practical part, they shift towards engaging higher-order thinking skills. Following the session's conclusion, all trainee teachers participate in a peer assessment process.
4th: CLIL-workout	The instructor formulates activities that foster active involvement and communication among trainee teachers, such as tasks involving the representation of the history of physical education.	The teaching unit presentation comprises two key sections: a theoretical segment and a practical component.

We will now narrow our focus to a specific set of sessions due to the chapter's space constraints. In particular, we will delve into the details of sessions 22-29, as these sessions enabled pre-service teachers to actively engage in a CLIL learning and practice approach. This involved the design and execution of a teaching unit lesson using CLIL methodology. Before these sessions took place, the future teachers had participated in a minimum of three meetings with the instructor to collaboratively design the teaching unit. Additionally, a post-lesson discussion followed, primarily aimed at sharing observations made during the teaching process, as outlined by Kihara et al. in 2021. Table 6 provides an example of the tasks that the students were required to prepare for each of these meetings.

TABLE 6. Contents during the three follow-up meetings between the future teachers and the professor.

Meeting number	**These are the assignments that students are expected to submit after completing them prior to their tutorial sessions.**
1st	Main topic, literature review, work planning and members' roles during the development process.
2nd	Structure of the teaching unit: objectives, competencies, method, assessment criteria linked to the 4 Cs of the CLIL methodology.
3rd	Concrete tasks, resources, responsibilities of team members during both the theoretical and practical presentations, as well as supplementary information for their colleagues to reference as they follow along with the presentations.

1.2 ACTIVE PEDAGOGICAL MODELS IN TEACHER TRAINING[2]

The demands of today's society require that the educational curriculum adopt a holistic and transformative character (Miller, 2019; Shapiro, 2003). In other words, it should not only focus on knowledge, but also on skills or competencies (Jess et al., 2016). Specifically, in areas such as physical education (PE), a holistic approach is necessary, which not only addresses physical skills and theoretical knowledge (Light, 2008), but also takes into account the processes of content acquisition and integral training of the person, which includes social, emotional, critical and constructive aspects to achieve the formation of a responsible and supportive citizens. To achieve this, we should look to develop in our future teachers (and citizens) an "effective personality" (Chiva et al., 2018).

Teachers act as promoters of the curriculum (Carse, 2015), from its interpretation to its implementation in schools. Sometimes, this task can be complex (Jess et al., 2016; 2021; Stenhouse, 1975), since it involves the planning experiences to generate learning. This reveals the nonlinear character of learning, which is influenced by the emergence of patterns as a result of the constraints that teachers apply to tasks, the environment or individuals (Newell et al., 1989). In other words, all human beings can be said to be complex systems that can self-organize. This means that people (as complex entities) can be predictable or unpredictable in their behavior, and they can negotiate boundaries and establish relationships with different ideas, individuals and objects (Keay et al., 2019), thus varying over time and being adaptable and creative (Valverde-Esteve, 2021). However, we must be careful when using the terms *complexity* and *complex systems*, and we should not understand them as being synonyms for difficulty and complicated systems – unlike complex systems, the latter are pre-programmed, predictable and usually provide the same output, remaining stable year in and year out (Dörnyei, 2014). If we take into account how these ideas can influence the curricula, pedagogy, and teacher training, we can analyze these contexts based on

[2] This chapter is based on Valverde-Esteve, T., Salvador-García, C., Chiva-Bartoll, O. & Gil-Gómez, J. (2021). Los modelos pedagógicos activos en la formación inicial docente: un enfoque no-lineal, transformador y sostenible. In *Igualdad y calidad educativa: oportunidades y desafíos de la enseñanza* (pp. 1903-1927). Dykinson.

the fundamental principles of complexity: self-organization, negotiation of limits, connections and how all these elements influence people in the long term (Kelso, 1997).

1.4.1. THE EDUCATIONAL CONTEXT AS A COMPLEX ENVIRONMENT

Focusing on the educational context, some theories have made use of the perspective of social complexity, impacting on current approaches to education and teaching. Traditional, modernist and positivist teaching has always sought answers to questions from a linear approach, that is, in terms of cause-and-effect relationships based on uncertainty. However, in Postmodernism, the observers of reality are not considered to be neutral, but rather as active participants whose reality must be analyzed and interpreted from different perspectives, thus generating multiple possibilities in the construction and acquisition of knowledge (Brosig, 2019).

There are three key elements in the negotiation of boundaries, on the basis of Newell's theory of constraints (Newell et al., 1989): the individual (physical, cognitive, social and emotional capabilities), the environment (the space and the people in it) and the task (different tasks add greater or lesser difficulty and require different cognitive strategies). Through this process, students can adjust factors such as their motor competence, motivation, creativity, the limits of social justice and prejudices, and gender segregation – things that often stand out in PE sessions. For this reason, it may be that boundaries seem ambiguous, and the key is that they are permanently present in the negotiation of the curriculum and need to be negotiated by everyone who is immersed in the development process (Gerson & Peiss, 1985). Connections are a very important factor in this process. Connections are a very important factor in this process, and taking them into account from a holistic perspective provides greater educational value. Likewise, we must recognize the interconnections of the educational system that occur by its very nature, exposing individuals to multiple national and international influences (Miller, 1999).

In the long term, it is not about the people responsible for initial teacher training instigating radical changes to the curriculum, but about starting off a long process that can evolve over time in ways that are sometimes predictable and sometimes not. These developments take time, need an opportunity to grow and must be continuously reviewed to ensure solid, adaptive and connected development. This process of

"recursive elaboration" (Hipkins & Boyd, 2011) is powerful in building a process that can promote different types of development.

1.4.2. CURRICULUM DEVELOPMENT

The current PE curriculum development method consists of implementing content blocks over a specific number of weeks. Some teachers seem unreceptive to new ideas introduced in their schools, which often have little long-term impact on their teaching practice (Kennedy, 2005). Consequently, teachers have become accustomed to pre-established ways to implement the national curriculum, with little consideration for their students' characteristics or context (Carse et al., 2018).

These content blocks are usually to be undertaken in a linear manner, with the expectation being that students will acquire the skills by imitation. To do this, teachers use the "pedagogy of certainty", based on pre-programmed or fixed predictions of complicated systems, making it very unlikely for students to be able to learn and acquire skills efficiently, adaptively or creatively. However, the pedagogy of complexity or nonlinear pedagogy (Chow et al., 2007; 2011; Chow & Atencio, 2014; Gómez-Criado & Valverde-Esteve, 2021; Valverde-Esteve, 2021) seeks to effect self-organization, interaction and the acquisition of skills in a deep and meaningful way. Through the principles of complexity, students acquire skills that enable an efficient, adaptive and creative learning process. This approach will help students to self-organize in ways that may be predictable or unpredictable, and that can help them to negotiate personal, environmental and task-related challenges, thus respecting the rhythms of acquisition of social and civic skills and competencies, as well as reducing gender segregation during practical activities.

1.4.3. TEACHER TRAINING

In turn, professional learning is a yet more complex process in which the needs of teachers and students and organizational factors all intervene (Day & Gu, 2007). We must, therefore, explore ideas from complexity thinking and the ecological perspective (Bronfenbrenner, 1994) in order to better design and support long-term professional development (Carse et al. al., 2018).

In short, teacher training requires an integrated and integrative design, seeking to create connections throughout the school curriculum, and establishing bridges between academic and professional perspectives as both impact upon the curriculum. The "pedagogy of the emergent" encompasses the complexity, the connections, the creativity and the emergent nature of student learning (Dalke et al., 2007). To this end, teachers must develop practices that take what students know as the starting point, with more focused, specific and recursive learning and creating permanent connections across subjects. Regarding the transfer of teaching methods to students, a simplistic cause-and-effect – or linear – approach is common.

Thus, the ideas of complexity reveal that teachers, as well as students, are learners who self-organize on different scales, structuring their own learning in different ways and achieving different outputs in learning. As a starting point, one idea would be for teachers to consider how their previous experiences, current abilities and personal interests act as constraints on how they undertake their professional work in different areas. The impact of changing these constraints would foster self-organization, an influential skill in the school context (Schiavio & Van Der Schyff, 2018). We must keep in mind that professional development in different areas is not an isolated event, but it is closely linked to a particular group, institution and local community. It is also important that the teaching team shares an overall vision of the subjects at the school, allowing them to be better understand the students' needs and to identify opportunities for individual and collective professional development.

Thus, it is about the entire educational community supporting each other in order to work in a collaborative, self-organized and recursive way, while also developing local programs connected to a clear educational vision of each area (Wagner & Leydesdorff, 2005). The curriculum, pedagogy and professional learning should provide the structure, adaptability and creativity to strengthen this educational perspective. Through self-organization and recursive elaboration, teachers can create the professional capital that will allow them to be better positioned to make a contribution to the curriculum, professional learning and the development of educational policies. Therefore, it is not about creating and implementing a dominant approach, but rather about creating an educational vision that offers robust theorization to support all the elements that interact with each other.

1.4.4. THE PEDAGOGICAL MODELS

Pedagogical models are characterized by building on and adding structure to teaching styles, focusing attention on the students (Fernández-Río et al., 2016). Recently, structures are being incorporated that encourage active participation, as well as creativity. This perspective, in addition to promoting the acquisition of content in a meaningful way (Michael, 2006), allows us to work to eliminate some stereotypes, as we will see in this section.

1.2.1.1. Nonlinear pedagogy

Nonlinear pedagogy is based on concepts from the theory of ecology and complexity of systems, which consists of the application of nonlinear dynamics during the teaching-learning process (Chow et al., 2015; Chow et al., 2021). Nonlinear pedagogy (Atencio, Jia-Yi, Keat-Clara, & Yi-Miriam, 2014) requires students and groups to learn from a holistic perspective that includes emotional and physical factors. Following Williams et al. (1999), the most important characteristics of neurobiological dynamic systems are their great integration within the system, and the interconnected and interactive parts or degrees of freedom, resulting in patterns of movement behavior. Likewise, a surprising degree of order among interacting degrees of freedom, an intrinsic tendency for self-organization, and the ability of subsystem components to influence the behavior of other subsystems, with variable outputs and the like achieved with different configurations of the components of the system (Gómez-Criado & Valverde,

2021; Valverde-Esteve, 2021). All these interactions become evident when working collaboratively. In this sense, nonlinear pedagogy (Chow et al., 2011) involves the manipulation of key elements, understood as the difficulties that we add when we encounter the tasks, materials and the environment (Newell, 1986).

Creativity has been shown to occur in the presence and absence of constraints. Some of the conditions that favor creativity are the level of culture, diversity in a group, trust and a positive climate. From the PE point of view, restrictions are defined as barriers or factors that limit activity. Task rules may not be physical barriers or constraints that physically eliminate certain responses, but they influence the movement patterns generated by an individual (Newell, 1986). When we refer to "movement", we mean the physical and cognitive part: that is, to segregation, marginalization, integration and inclusion, which can occur throughout the process. We must pay sufficient attention to the way participants interpret the tasks we ask of them, which will lead to the production of different movement patterns for the same task constraints (Newell, 1986). As a result, self-organization is the spontaneous interaction that leads to the emergence of a new order and refers to more or less spontaneous processes in which external control is not the most important factor. In the case of processes that involve several people, the emerging responses are even more evident. The dimensionality of behavior is reduced by the interaction of cooperative elements that form complex systems (Balagué et al., 2013).

1.2.1.2. Place-based education

In this model, the students take responsibility for planning exchanges with the neighborhood and the environment that surrounds them, enabling them to show a high degree of initiative. Rooted in local history and ecology, the approach be combined with a range of different themes (Beames and Ross, 2010; Gruenwald, 2003; Lowenstein, et al., 2018; Smith, 2002; Sobel, 2004).

1.2.1.2. Service-learning

Service-learning (SL) (Puig et al., 2007) uses community service to facilitate the inclusion of different groups at risk of exclusion due to a range of social, sociocultural or socio-geographical factors (income, employment, education, socioeconomic status,

gender, ethnicity, religion, culture, migrant status, social capital, residence in disadvantaged neighborhoods, or age) (Chiva et al., 2019; Capella et al., 2015; 2018; Tapia, 2008).

1.2.1.3. Cooperative learning

This pedagogical model places greater importance on the process rather than the outcome, which is treated as a symbolic action (Rodríguez-Sánchez, 2015). The teaching role changes to that of facilitator, with an intervention based on participation and the promotion of shared assessment (López-Pastor et al., 2005). Specifically, it encourages the active participation of all students during the teaching-learning process, in addition to promoting critical and logical thinking, because students must face problematic situations (Gutiérrez del Moral, 2009), through shared individual responsibility (Johnson & Johnson, 1999).

1.2.1.4. Flipped classroom or flipped learning

The flipped classroom teaching model (Arnold-Garza, 2014) achieves its impact through a focus on student autonomy in the discovery of knowledge via the use of information and communication technologies (ICT) (Cabrero & Pallarés, 2019) outside the classroom, thus increasing student interactions inside the classroom (O'Flaherty & Philips, 2015).

1.2. CREATIVITY IN THE CLASSROOM AS AN EMERGENT AND NONLINEAR PATTERN

The educational curriculum lays the foundation of the teaching-learning processes for every teacher. It includes the objectives of each stage, the target competencies, the contents, the teaching methods, the standards and assessable learning outcomes and the assessment criteria. In the case of PE, the current trend in the educational curriculum is for the block of content related to body expression to be use to encourage disinhibition and the externalization of feelings and emotions. Therefore, issues such as communication and relationships are commonly suggested, with the complexity of the tasks increasing to achieve greater participation and foster a creative and entrepreneurial spirit. The transversal elements can be undertaken

simultaneously, promoting respect and tolerance through the subject of PE (Valverde-Esteve et al., 2021). Especially in this respect, teachers strive to implement activities that give students the opportunity to explore their creativity.

The creative process, and its application to areas such as art or sports, has attracted increasing academic interest in recent years. Since the 1950s, the main objectives of studies on creativity typically focus on the instruments used to assess it, the techniques employed to promote its development (Sánchez et al., 2003), and how creativity can be induced (Lucznik, 2015; Sawyer et al., 2013). Creativity was defined by Gilford (1950) as the ability to produce numerous valid solutions to a specific problem. Certain properties such as uniqueness, novelty (Hristovski et al., 2011), functionality, originality, or a wide range of ideas (Glück et al., 2002), have been attributed to creativity. Therefore, a creative person is characterized by their ability to develop and produce diverse ideas and be flexible when they are not effective (Guilford & Strom, 1978). Also, creations do not necessarily have to be material. We can refer to mental states or structures, events and actions (Wreen, 2015; Valero-Matas et al., 2016). In the educational field, we talk about creating innovative teaching resources for the design of activities that promote the transversal objectives and content that we intend to transmit.

1.3. EMPOWERMENT THROUGH ACTIVE METHODS

The success of such approaches lies in facilitating access, the adaptation to individual, collective and curricular needs, and the empowerment of women through peer teaching and learning (Rao & Strauss, 2008). In the case of the SL, there is a desire to motivate and raise awareness among learners, in addition to those who already pursue their studies for the improvement of society. For this reason, the population for which it can be used to help can range from children and adolescents to the elderly, those with functional diversity and those deprived of liberty, with those who provide the service being, the university students.

These methods are compatible with the United Nations' Sustainable Development Goals (SDG) for 2030. In this sense, students involved in active methods obtain personal and social growth, contributing to dismantling stereotypes, greater cultural sensitivity, and a greater understanding of sociopolitical phenomena (Chiva-Bartoll et al., 2020; Gil-

Gómez et al., 2015; Winans-Solis, 2014; Zimmerman et al., 2009). They do this by becoming agents that generate the discovery of their own knowledge, through experiential learning. In fact, it has been shown how methods such as SL promote the development of students' identities (Nelson & Sneller, 2011) and reinforcing and intensifying feminist identities (Eyler & Giles, 1999; Kackar-Cam & Schmidt, 2014; Kelly, 2015). Specifically, social engagement can encourage girls to engage with oppressive forces (Currie et al., 2009; DeMuth, 2011), challenge unjust social or school practices and promote improvements in feelings of belonging (Leblanc, 2001; Winans-Solis, 2014).

Because teachers tend to teach in the same way they were taught, they are uniquely positioned to act as role models. In recent years, researchers focused on teacher training have highlighted the importance of elucidating the hidden curriculum (Kirk, 2012), equality (Evans, 1990; Ennis, 1999), sociocultural perspectives (Cliff, et al., 2009; Flory et al., 2014), body image (Kirk 2006; Tinning & Glasby, 2002) and gender (Brown 2005; Dowling, 2008; Langnes, 2017; Langnes, & Fasting, 2017). However, many teacher trainers have shown only a timid response to gender bias, especially in PE and in challenging unequal relationships (Evans & Penney, 2002).

For these reasons, teacher training should include a gender perspective, challenging certain curricular practices, such as in the case of PE, and promoting greater inclusion (Felis-Anaya et al., 2017; Flintoff & Scraton, 2006), in order to maximize educational opportunities for all students (Wilkinson, 2019). Gender is a complex structure of power relations, so any discussion within standard educational practices must consider that there is no single feminist school of thought, but rather a multifaceted mosaic of feminist views (Wilkinson, 2019). It is necessary to take practical steps forward, despite the complexity of gender issues (Martín & Beese, 2016), to reduce barriers (Wright et al., 2017). Transformative pedagogies draw on various discourses, including critical pedagogy, feminist pedagogy, poststructuralism, and queer theory, among others (Hytten & Bettez, 2011). Taking these approaches into account, professional and academic staff must collaborate to find transformative pedagogical approaches towards a less biased education, including a feminist point of view. In this sense, a methodological approach to improve gender equity could lie in active methods.

Attitudes towards gender equality have been studied from different perspectives. Some studies have focused on analyzing academic and professional expectations (Jiménez et al., 2006; Rodríguez et al., 2008), students' beliefs and attitudes (Colás & Villaciervos, 2007), sexist attitudes (Lameiras & Rodríguez, 2002), gender violence (Moya et al., 2007), and the corporal, social, intellectual and emotional dimensions (Colás & Villacievos, 2007). The assessment of activities and the roles of women and men can determine the opportunities to which they have access (Pérez et al., 2010). To understand rights from a gender perspective, Subrahmanian (2005) indicates that any approach to remedy this must comprise learning content, teaching methods and processes, choice of topic, modes of assessment, management of peer relationships, and the learning outcomes.

1.4. EMPOWERMENT THROUGH SL IN RESPONSE TO THE SDGS

As stated in the previous section, active methodologies emerge as pedagogical proposals with the capacity to empower students. This fact acquires special importance in the field of teacher training, since future teachers must be able to understand how influential they are as role models once they reach the classroom. Among the different active methods presented, this section focuses on service-learning (SL) since the literature confirms that this type of pedagogical initiative allows all the agents involved to be empowered (Phillips, 2021). Furthermore, in the specific field of PE teacher training, SL offers a diverse range of real educational scenarios, providing an approach that promotes and increases the visibility and strength of inclusive education (Chiva-Bartoll, et al., 2021).

These fundamental features of SL connect with the fourth of the UN's Sustainable Development Goals (SDGs) as part of its 2030 Agenda: to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. We will now consider how this methodological approach is capable of contributing to each of the components of the aforementioned objective.

Firstly, SL has often been linked to inclusive education. For example, Chiva-Bartoll et al. (2020a) focused on the impact of SL in relation to educational inclusion, and concludes that this approach (1) increases the ability of teachers to resolve difficulties in situ and adapt activities to their students, (2) contributes to creating a deeper understanding of

the diversity of the group with which future teachers work thanks to the interaction that is established and (3) enables trainee teachers to see that inclusion has not been fully achieved and continues to be as an educational and social goal to fulfil. However, these authors emphasize the need to adopt critical perspectives on SL, in which reflection processes are essential.

In addition to promoting inclusive education, SL can also encourage significant changes at the social level in a broad sense, including the promotion of equality, equity, accessibility, etc. (An & Decker, 2019). Thus, as a consequence of sharing experiences with vulnerable groups, SL does not only provide an opportunity to carry out support activities related to curricular training and the transfer of knowledge, but it can be the means through which trainee teachers can build teaching skills focused on social and community issues. In other words, this approach, in the field of initial PE teacher training and applied from a critical perspective, may be able to contribute to the promotion of social justice (García-Rico, et al., 2020). Furthermore, according to the literature, SL can favor the elimination of social prejudices (Ruiz-Montero, et al., 2020) and encourage students to take part in or even promote future volunteering initiatives (Chiva-Bartoll et al., 2020b), thus “raising future teachers' awareness of the need to transform education and promote a more just and equitable society” (García-Rico, et al., 2020, p. 40). In short, everything indicates that SL can influence the promotion of inclusion, equity and social justice even in the long term.

Multiple studies support the positive influence of SL with respect to various issues related to quality education, including the academic, professional, personal and social development achieved by university students (Opazo et al., 2019). More specifically with regard to PE teacher training, a recent review of the literature found that SL stands as a powerful resource for the development of academic, social and personal skills (Pérez-Ordás et al., 2021). All these benefits reveal the holistic pedagogical value that SL has, since far from being limited to promoting specific content, it favors the development of multiple skills: it is an active method that promotes a comprehensive quality education.

Finally, the fourth SDG refers to promoting lifelong learning opportunities for all, which SL can also achieve. There are numerous SL projects undertaken from an intergenerational perspective, in which students in training perform their service with

older adults. Although studies on initiatives of this type have focused mainly on the effects on students (Pérez-Ordás et al., 2021), new research is beginning to give a voice to the recipients of the service, highlighting its potential benefits for older adult participants (June & Andreoletti, 2020; Ruiz-Montero et al., 2020). In short, through its use in the field of teacher training, the service offered is usually linked to learning and education, meaning that the vulnerable target groups for SL, including people of all ages and characteristics, can thus benefit from lifelong learning opportunities.

1.5. IMPLEMENTATION OF CLIL[3]

Table 7 provides an overview of a standard session plan crafted by the instructor during peak student engagement, during the presentation of their teaching units.

TABLE 7. Example of a Teaching Physical Education session carried out during the presentation period.

Part of the session	Contents	Student Roles	Examples
Beginning	The presentation encompasses the theoretical foundation of the forthcoming teaching unit that students are tasked with creating. This includes the context for which the unit is designed, such as topics like games and sports, body language, or outdoor activities.	Students make notes to prepare responses to questions that will be discussed throughout the session, and these questions might also be included in the final examination for the course.	The instructor introduces content related to the history of physical education, along with the cognitive, communicative, and cultural resources required for two key purposes: 1) To delve into the theoretical framework, and 2) To present physical education in historical contexts such as in Ancient Greece, Rome, the Renaissance, or the Enlightenment, using role-playing games.

[3] The information collected in this section has been extracted from Valverde-Esteve, T., Salvador-García, C., & Ruiz-Madrid, MN (2023). Teaching Physical Education Through English: Promoting Pre-Service Teachers Effective Personality Through a Learning-Practice Approach. In Estrada & Zayas (cords). *Handbook of Research on Training Teachers for Bilingual Education in Primary Schools* (pp. 237-257). IGI Global.

Main part	A practical session within the teaching unit typically involves activities such as working in designated areas or corners of the room. During this session, students follow concise explanations of each activity, and through guided discovery, they actively engage in the game, sport, or choreography being taught.	Students actively create the practical content, keeping a close eye on the components specified in the rubric. This ensures that they can offer constructive feedback once this section is completed.	The students assume their designated roles and, in the process of explaining to their peers what physical education entailed during the specified historical periods or the Olympic Games, actively engage in the presentation. The instructor promotes active participation and offers constructive feedback to support their efforts.
Discussion and conclusion	In the context of "lesson study," students observe and practice both the theoretical and practical presentations by their peers. Following these observations and practices, a rubric is distributed to foster collaborative group discussions and processing among the students.	The students complete the rubric for the practical segment of the session, assessing it based on the following criteria: 1. contextualization of the teaching unit, 2. group organization, 3. presentation flow, 4. originality of the activities, 5. adaptation of the activities to the primary education curriculum, 6. adaptation to special needs	The students participate in a game designed to pose interactive questions related to both the theoretical and practical presentations. They continue to apply age-appropriate verbal and non-verbal communication skills as they represent a specific age group. Following this activity, students engage in a peer feedback session, offering constructive input to enhance their future presentations and activity designs.

1.5.1. Cooperative Learning: examining its Impact on Social Responsibility and Sustainable Learning through the Perspective of Nonlinear Pedagogy[4]

In the 21st century, there have been substantial transformations in the approach to education. The student is no longer a passive participant but has evolved into an active agent deeply engaged in the learning process. This shift towards active engagement has fostered the acquisition of skills through a democratic perspective (Erbil and Kocabas, 2018). Students now take an active role in shaping their own learning journeys, which enhances their sense of responsibility and autonomy.

Consequently, learning is no longer perceived as a linear progression but rather as nonlinear. This means that the traditional model of test-response has been replaced by a paradigm where teachers, acting as guides, facilitate dynamic experiences that encourage the emergence of diverse, non-uniform patterns of learning in response to various contextual factors (Newell, 1986).

In this evolving educational landscape, a pedagogical method known as 'Nonlinear Pedagogy' has emerged. It is characterized by its emphasis on developing competencies in environments that closely resemble real-world scenarios (Renshaw and Chow, 2019). This approach encourages creative responses to the aforementioned contextual constraints (Tromp and Sternberg, 2022). The current education legislation (Royal Decree 157/2022, LOMLOE and Decree 106/2022), which establishes the basic teaching framework for primary education in Spain, proposes certain 'learning situations', to be combined, if possible, with digital learning environments. It also seeks to promote creativity in learning, through self-confidence, or personal initiative, in addition to critical thinking.

In this context, teachers face the challenge of crafting scenarios that closely mirror the real-life experiences of their students. These scenarios should require students to respond appropriately, drawing on the resources at their disposal. This approach greatly enhances not only their authentic learning, drawing inspiration from

[4] This information is obtained from the one published in the chapter by Valverde-Esteve (In press). How can active methodologies taught through cooperative learning influence the social responsibility? An exploratory study from the nonlinear pedagogy lens. In Ortega-Sánchez & López-Padrón (coord). *Educación y Sociedad: claves interdisciplinares*. (pp. 1540-1550). Octaedro.

Dewey's insights (1938), but also promotes competency development. Moreover, it aligns with experiential learning principles (Kolb, 2014), making learning more meaningful (Fink, 2013), and sustainable over time (Bell and Morse, 2013).

Indeed, this approach not only facilitates the acquisition of knowledge and skills but also fosters the establishment of meaningful connections across diverse content areas and knowledge domains. The classroom's human and material resources have become increasingly versatile, thanks to the various approaches available and the ease of access to information.

In the context of physical education, it is noteworthy that this subject is characterized by an emphasis on experiential learning from a holistic perspective (Weiss, 2011). This holistic approach encompasses both social and academic dimensions and serves to develop cognitive skills, self-efficacy, respect for norms, the sharing of experiences with family and community, and empathy, among other valuable qualities (see Table 8).

TABLE 8. The 5 Cs of the holistic approach that characterizes physical education sessions.

Dimension	Description
Competence	Social, academic and cognitive skills
Confidence	Self-efficacy and global self-regard
Character	Respect for social and cultural norms
Connection	Positive exchanges between peers, family, school and community
Caring	Sense of empathy and sympathy

Source: adapted from Weiss (2011).

These dimensions can be effectively nurtured in students through various pedagogical models, one of which is cooperative learning. Cooperative learning provides a valuable opportunity to foster teamwork and encourage participation within the group-system dynamics throughout the teaching-learning process (Fernández-Río et al., 2022). Additionally, cooperative learning promotes critical thinking, problem-solving abilities, and autonomous learning.

Among its distinguishing features, shown in Table 9, cooperative learning encompasses positive interdependence, face-to-face interaction, shared responsibility, the cultivation of social skills, and group evaluation (Johnson & Johnson, 1999).

TABLE 9. The principles of cooperative learning and their characteristics.

Beginning	**Characteristics**
Positive interdependence	Transforming 'I' into 'we' represents a shift from individualism to collaboration and collective engagement. It signifies a move from personal, self-oriented perspectives to a more inclusive, cooperative approach where the emphasis is on working together as a team or community to achieve common goals and objectives.
Face to face interaction	Collaborating and working together means that individuals not only contribute to a collective effort but also gain knowledge and insights collectively. It emphasizes the idea that through collaborative endeavors, individuals can learn from one another and collectively expand their understanding and skills.
Shared responsibility	The concept of individual accountability evolves into shared responsibility, emphasizing that in collaborative settings or group efforts, individuals collectively bear the responsibility for achieving goals and outcomes. This shift underscores the importance of cooperation and mutual accountability within a group or team.
Development of social skills	"Learning to live together" encapsulates the idea that education and social experiences should equip individuals with the skills, attitudes, and knowledge needed to coexist harmoniously in diverse and interconnected societies. It emphasizes the importance of fostering values such as tolerance, empathy, and cooperation to promote peaceful and inclusive communities.
Group evaluation	"Evaluating to improve" underscores the purpose of assessment and evaluation as a means of identifying areas for enhancement and growth. Instead of solely focusing on judgment or grading, this perspective highlights the value of assessment in providing constructive feedback and insights that can be used to make improvements and progress in various aspects of a task, project, or process.

Source: own elaboration based on Johnson & Johnson (1999).

In this context, Johnson & Johnson (2014) emphasize that 21st-century skills, which can be cultivated through cooperative learning, have the potential to enhance students' creativity. These skills encompass the ability to generate a wide range of ideas, exhibit originality, and demonstrate flexibility, particularly when conventional approaches prove ineffective. Encouraging divergent thinking, especially during

educational stages that involve higher-order cognitive processes like 'analyzing', 'evaluating', and 'creating', is of paramount importance (Lewis & Smith, 1993).

The ability to nurture creativity also has a positive impact on other crucial skills, including the ability to research an issue, collaborating, establishing connections, assimilating information, and synthesizing knowledge (Livingston, 2010). Didactic approaches within higher education that emphasize student interaction through active participation (Valverde et al., 2019a, 2019b, 2021, 2022; Valverde-Tordera, 2023) and innovation (Kratzer et al. (2004) serve as vital tools to cultivate competency-based learning, critical thinking, reasoning, communication skills, etc.

Project-based learning within higher education, which seeks to develop skills such as teamwork and problem-solving (Casner-Lotto and Barrington, 2006), provides a valuable opportunity to bridge the gap between theory and practice. This approach enables students to connect the materials studied in the classroom with real-world contexts while fostering their sense of commitment and engagement.

Monitoring the progress of projects through assessment is crucial for gauging our students' skills. Contemporary assessment methods, such as formative assessment, enable us to go beyond merely assigning numerical grades (Gillies and Boyle, 2010). Formative assessment involves ongoing monitoring and providing feedback and feedforward throughout the process of content acquisition. Formative feedback serves the purpose of providing information to students to help enhance their learning. There are several characteristics of formative feedback to consider (Shute, 2008), as can be seen in Table 10.

TABLE 10. Feedback characteristics.

Characteristic	**Objectives of formative feedback**
Purpose	Increase knowledge, understanding and skills. Examples of roles: - Manager, informing students of what can be improved. - Facilitator, allowing the other person to review themselves through comments.
Cognitive mechanisms	Reduce uncertainty and cognitive load on students.

Specificity	Present a specific level of information that allows the student to receive information about how to improve.
Features	- Check, to confirm if an answer is correct or not. - Elaborate, to provide guidance through discussing errors or exemplification.
Complexity and duration	Take into account the content and amount of information that should be included in the messages.

Source: adapted from Shute (2008).

The details of the teaching sessions in which this subject is taught, with a focus on students' completion of a teaching unit project which is presented to their peers, are outlined in Table 11. This table provides a clear sequence of the topics covered, along with the classroom activities and assessment procedures conducted during both in-class sessions and tutorials.

TABLE 11. Shows the activity and target knowledge in chronological order.

Session number	Activity	Knowledge
1	Creation of groups and selection of knowledge to focus on	Introduction to cooperative learning and Aronson's jigsaw technique
2	Autonomous work serves as a guide for students to independently explore and discover the essential elements they need to incorporate into their planning.	Levels of curricular specification: the national and regional educational curriculum and its elements; learning situations, competencies, objectives, knowledge, learning outcomes, assessment, methods
3	Expert meetings according to the elements to be introduced in the plan and return to the initial groups	Thematic articles and books provided by the teacher in which the thematic units are developed
4, 5, 6	Feedback on follow-up in tutorials	Elements introduced in the plan and teaching sessions

There are four phases to this learning process, with different activities (Figure 1). During the first phase, achieving group cohesion and the right classroom atmosphere is the goal. This phase requires mutual knowledge and interaction, as well as the use of techniques to motivate participation and reach consensus. Once the

groups have been created, roles and responsibilities within them are assigned to enable the students to proceed to self-organize to achieve the common objective.

During the second phase, self-organization takes center stage, characterized by the spontaneous emergence of patterns, as explained by Priogine and Nicolis (1977). These patterns result from the myriad interactions occurring within the class-system, which is viewed as a complex and dynamic environment. To facilitate this self-organization, teachers must foster internal mechanisms and dynamics during their teaching sessions. The goal is to create an optimal classroom atmosphere that enables students to unlock and realize their full potential.

The third phase involves the implementation of cooperative structures, enabling teachers to identify the most effective methods and techniques for classroom development. As part of this approach, a strategy like Aronson's jigsaw technique (Aronson, 1978) can be incorporated, wherein students initially work in small groups, then form "expert groups," and ultimately return to their original groups (see Figure 1).

In the fourth phase, the focus shifts to assessment with the aim being to enhance student cooperation processes. This phase offers the opportunity to implement mechanisms like peer assessment and self-assessment, which can help to promote effective cooperative learning.

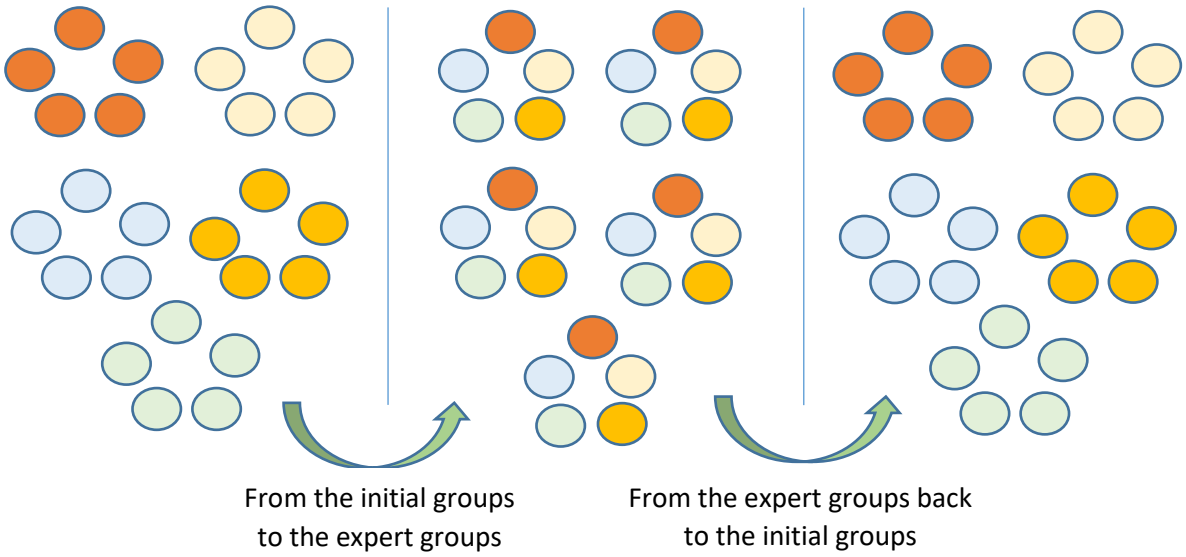

FIGURE 1. Aronson's jigsaw activity. Source: own elaboration based on Aronson (1978) and obtained from Valverde-Esteve (in press, 2024).

The teacher guides the students through these phases and closely oversees the progress of group work. This monitoring is conducted through a total of three in-person sessions within the regular classroom setting and an additional three sessions in tutorials (see Table 12).

TABLE 12. The knowledge, content, method and assessment used in the teaching sessions.

Knowledge	
Learning situations	- Motor challenges - Variety of the environment - Responsibility in the environment - Creativity - Physical literacy - Emotional regulation - Motivational styles - Physical activity and health
Knowledge	- Problem solving in motor situations - Active lifestyles - Physical activity management - Emotional regulation and motor interaction - Manifestations of physical culture - Sustainable interaction with the environment
Assessment	- Formative and shared - Self-appraisal - Instructor assessment - Peer assessment
Competencies	- Multilingual - Mathematics, science and technology - Digital - Personal, social and learning to learn - Citizenship - Entrepreneurship - Cultural expression
Attention to diversity	- Co-education

	- Universal learning design

The roles shown in Table 13 were used for the activity.

TABLE 13. Shows the roles and tasks developed by each member of each group.

Roles	Responsibilities
Moderator	- Motivating the team to make progress. - Ensuring that all group members participate in and complete tasks. - Possessing a clear understanding of the different components of what needs to be done. - Assigning specific tasks to each team member, providing clear direction regarding their responsibilities throughout the process.
Supervisor	- Recording daily progress for the overall project. - Ensuring that every group member records their assigned tasks. - Keeping track of pending tasks and each member's commitments within the group.
Time manager	- Monitoring and managing the timing of the activity. - Ensuring that the workspace remains neat and tidy. - Monitoring and regulating the noise level within the group. - Safeguarding and properly storing materials and resources. - Facilitating and ensuring each person can speak during the group discussions.
Animator	- Acting as the spokesperson for the group when necessary. - Ensuring that all group members have an equal opportunity to participate. - Providing support and acknowledgment for the contributions and positive development that arise within the group.
Critic	- Conducting a critical assessment of the group's performance and dynamics. - Ensuring an accurate diagnosis of the group's progress to facilitate further improvement. - Remaining open to collaborating and discussing with other professionals. - Analyzing the interpersonal relationships within the group. - Facilitating dialogue with colleagues regarding the group's functioning.

Since the 1980s, cooperative learning has been recognized as an effective pedagogical approach for creating enriched learning environments (Slavin, 1980; 1989). Today, many trainee teachers express their enthusiasm to incorporate cooperative learning methods into their future practice in primary education. There are several reasons for this.

Firstly, students appreciate the practical experience that cooperative earning offers compared to traditional method, in addition to the autonomy it affords them (Hänze and Berger, 2007), and the minimal instructions required from the teacher (Loh and Ang, 2019).

Moreover, the students see that cooperative learning enhances content acquisition when knowledge is shared among peers (Johnson et al., 2000), as this approach improves processes like information retention, self-assessment, monitoring, and learning (Karpicke and Blunt. 2011; Hattie, 2009). The shared language and similar baseline from which the peer learners start from facilitate these benefits (Cornwall, 1980).

Furthermore, the students involved in this learning experience emphasize the stimulation of creativity during cooperative learning (Roger and Johnson, 1994). The method fosters an environment where diverse ideas are not only heard but actively pursued as a means of improvement instead of being disregarded.

In the process of exchanging ideas, cooperative learning promotes a rich variety of thoughts, evokes a sense of enjoyment, and encourages the expression of originality, particularly when tackling problems that require creative solutions. Research by Amponsah et al. (2019), Bolen and Torrance (1978), and Marcos et al. (2020) also support the idea that cooperative learning enhances creativity, partly because students feel at ease sharing their ideas with their peers, creating a conducive atmosphere for innovation.

The processes for group cognitive enrichment are conditioned to a large extent by the environment generated by the teachers, but also by the distribution of roles that the students perform. Thus, Joyce and Showers (1988) suggest the assignation of roles through specific programs that involve the transmission of information, theory,

demonstration, practice, feedback and training to obtain maximum performance. Also, Mogelvang and Nyléhn (2023) highlight the opportunity that cooperative work offers to increase the feeling of belonging. Through these activities, equity of opportunities towards success is promoted (Slavin, 1986) and they can be both face-to-face and virtual, as has been shown recently (Silalahi & Hutauruk, 2020; Wang et al., 2023). This requires teachers to act as a guide during the processes of the search for, selection, and synthesis of information and the presentation and discussion of results (Booth, 2012).

Due to the lockdowns and other pandemic-related restrictions, new methodological strategies have been established to facilitate communication between group members through digital platforms (Abdelbadie, 2023; Napaporn et al., 2023). Along these lines, studies such as that of Dewi et al. (2021) demonstrate that digital media have a positive influence on attitudes towards learning, as well as on motivation in tasks undertaken as part of cooperative learning. Nikolic et al. (2019) have shown the importance of using ICT in educational processes, as they can stimulate the curiosity to know and facilitate access to materials, which has been seen in the development of this very proposal, in fact.

1.5.2. DEBATES: A PROPOSAL TO PROMOTE THE EVALUATION OF INFORMATION FROM NONLINEAR PEDAGOGY[5]

Competency-based learning seeks to reproduce those situations which can enable the maximum possible transfer from the teaching-learning environments to "real" situations outside of this environment. Thus, current education legislation (Royal Decree 157/2022 (LOMLOE) and Decree 106/2022), which establishes the basic teaching framework for primary education in Spain, proposes certain 'learning situations' in which to develop 'knowledge'. Therefore, transversal issues must be included in teaching programs, such as a critical perspective, communicative situations, gender equality and the diversity of teaching materials that demand commitment from the students.

Specifically, the importance of cooperative work and of the development of creativity have been highlighted as key 21st century skills, in line with the arguments put forward by Johnson & Johnson (2014), in order to meet challenges such as global interdependence, the increasing number of democracies or changes in interpersonal relationships. The above authors updated their earlier view of the skills required for life, in order to meet these new challenges, placing special emphasis on interpersonal relationships and the need to promote success among students, working together to overcome difficulties that may arise, and understanding the different means through which the students can interact. School curricula must therefore place importance on skills to search for and select information, and create learning scenarios, encouraging the use of digital devices for this purpose (Papastergiou, 2009).

By definition, a debate is a type of communication where two people (or groups of people) discuss a topic, generally taking opposing positions or sides, and where each of these sides defends their positions using ideas based on critical thinking (Tessier, 2009). It is, therefore, key that ideas are based on quantitative information (e.g., statistics or studies) and qualitative information (e.g., quotes or examples), using reputable sources and avoiding personal opinions or anecdotes. It is not surprising that

[5]The information collected in this section has been extracted from Valverde-Esteve, T. & Tordera-Salvador, D. (2023). Promotion of critical thinking and evaluation of information from Non-Linear Pedagogy through debates. In: Vicente-Fernández, Puebla & Cabello (coords). *Teaching innovation in pedagogy and its social contribution through the transfer of knowledge.* Dykinson.

this powerful communication method has historically been related to critical thinking and democracy (Tumpousky 2014).

Applied to the classroom environment, debates are forms of active learning that can help to develop students' critical thinking and their ability to argue, listen and gather information, among other skills (Jackson, 1973). Its usefulness as a teaching tool has been recognized and explored, with different approaches and formats used for class debates (Tessier 2009), even including mock trials (Ninin, 2022). The use of debates also allows for the introduction of a multidisciplinary approach, thus promoting the development of critical thinking and the assimilation of knowledge from multiple scientific and technical branches (Boix, 2017), something which can be otherwise difficult to achieve. Currently, in education, such interdisciplinary learning varies in nature given the range of study plans and departmental differences (Jones, 2010), which must be taken into consideration when designing new approaches.

In subjects such as PE, creative or divergent thinking is closely linked to active learning, due to its eminently practical nature. The ability to create original proposals requires higher-order thinking, referring to the development of skills such as analysis, evaluation or creativity (Lewis & Smith, 1993). Learning styles is one of the elements that can introduce 'learning situations', based on the assignment of roles to students to enable them to self-manage the challenges that arise. To do this, students tend to self-organize around common intentions (Stacey et al., 2000) to generate degrees of freedom or alternatives (Kluge et al., 1980), something that is found in complex systems such as the teaching classroom and the teaching-learning process (Keay et al., 2019).

If we analyze the situation of the debate, framed in the teaching-learning process from the perspective of nonlinear pedagogy, we can affirm the presence of constraints in the tasks, the environment and the people (Newell, 1986). This is because the task is limited to a specific topic, with specific times. Likewise, the environment is restricted to teaching sessions, to an audience of peers or to the broadcast of debates through self-created videos. In the same way, the students present constraints in terms of the topic and the language in which they express themselves, since, since this is not their native language, and they must make an effort to use verbal and non-verbal

elements that allow them to communicate and achieve understanding in front of their classmates.

Following Torrents et al. (2021), the fact that students encounter these constraints may favor the emergence of creative patterns, to a greater extent than when these constraints are not present. Thus, students are challenged to successfully complete the tasks and explore their limits.

Proposals that promote student development across boundaries consolidate learning and support transfer to different contexts (Keay et al. (2019). However, by exploring around the boundaries, motivation to undertake the tasks is achieved. Even by trying out the possibilities that exist beyond the limits, students explore their creativity and learn how to acquire skills in an active way using their resources and possibilities. In this way, debates can be a way of challenging students to actively acquire knowledge and skills that allow them to go beyond memorization and consolidate learning, i.e., making it last over time.

Back in 1969, Dale pointed out that learners retain up to 70% of what has been discussed with their peers or other people, or which they learnt by cooperative participation, compared to 10% from reading. This means that a greater emphasis on exchange of ideas between peers can lead to increased academic achievement (Maheady et al., 1988) and the development of social skills, in terms of waiting for a turn to speak and listening while peers express their ideas, provide feedback, or seek consensus (Prater et al., 1999).

Currently, debates are seen as an active example of constructing information (Capella-Peris et al., 2021), in addition to promoting critical thinking and it is used in the Teaching Physical Education course as a way of exploring information in a more innovative way, instead of it being transmitted in the more traditional format of the lecture. In the course, students are presented with content related to the history of physical education using embodied cognition, using their body as an active element in the cognitive process of experiencing the different historical stages of physical education (Shapiro, 2010; Valverde-Esteve et al., 2019; 2022). This is important, because, prior to the debate activity, the students experience the development of bodily creativity and disinhibition during 9 sessions lasting two hours each, enabling

them to develop beforehand the contents of verbal and non-verbal communication, and select information to be transmitted to their peers.

Once the activity has concluded, the teacher provides the students with the information that they must know about the pedagogical models, the latest educational legislation (LOMLOE), and elements of teaching programs. Regarding pedagogical models, the professor provides some slides presenting each pedagogical model and a brief description of it, following Fernández-Río et al. (2016): 1) the sport education model, 2) teaching games for understanding, 3) promotion of social and personal responsibility, 4) the environment, 5) physical literacy, 6) attitudinal style, 7) playground model, 8) education for health, 9) hybrid models and 10) service-learning.

Next, the teacher explains the teaching plan and the sequencing around the debates, as follows:

- Introduction to debates: This section shows the typical structure of debates, such as the teams or time available. The students are divided into small heterogeneous groups.
- Selection of topics: the teacher presents the topics again and a draw is made to determine which group deals with each topic. Students form small work groups in different parts of the classroom.
- Argumentation: another draw is carried out to determine who in each group will argue for or against the matter in question. The students then subdivide their group accordingly.
- Strategy: the teacher reminds students, using the Moodle teaching platform, of the different strategies they can use, such as 'the colored hat' (De Bono, 1988), or the 'roles of cooperative work' (Johnson & Johnson, 2008). The students decide, autonomously, on the strategy that best suits the activity.
- Autonomous work: students, in their groups, organize themselves and create arguments for and against each pedagogical model. The students deliver the information on the pedagogical models through a 'task' created by the teacher on the 'Moodle' platform.
- Evidence: the teacher requires the students to use ICT to record the experience and provide information from each 'expert group' to the rest of the groups. The

students edit this activity and upload it to the YouTube platform, so that the rest of the groups can have access to it and use the arguments to justify their planning.

- Nurturing students' curiosity is a key skill for teachers. Thus, emphasis is placed on the formulation of questions to be answered during the practical sessions. Furthermore, attention must be paid to the use of technology to search for information since students have problems finding information and evaluating its suitability (Egaña et al., 2013). Emphasis is placed on the use of search engines and scientific databases, the search for sources in English and the critical analysis of the information found.

The development of communication skills is key to the students' training and their subsequent career prospects. Not surprisingly, a great deal of effort is made in education to encourage the development of these skills using innovative approaches such as storytelling (Mokhtar et al., 2011), music (Akhmadullina et al., 2016) or the use of actors to simulate real conditions. (Zavertnik et al., 2010). Thus, this activity helps students develop communicative competence most of all, judging by the number and types of student responses. In particular, the activity promotes the students' public speaking skills and active listening. One of the biggest challenges that teachers face is to achieve the active participation of all students equally (Borg, 2019). However, despite the voluntary assignation of roles, some students continue to perceive that their participation or work does not receive the recognition it deserves. The use of ICT is another skill that the students develop and appreciate, but there is still some controversy regarding its use (Mosquera et al., 2016).

1.6. GENDER AND MULTICULTURALISM AS TRANSVERSAL ELEMENTS IN THE SUBJECT

Gender and multiculturalism are two transversal elements of great importance for all courses including Didactics of Physical Education in Primary Teaching.

This section shows some proposals of how these themes can be introduced. The first proposed activity is raising awareness through viewing an interview with the first woman to run the Boston Marathon, and the impact that this event had. Next, a short debate is proposed about how society and the forms of participation in any sporting event taking place in Europe have changed. At this point, the instructor takes the opportunity to ask some questions to the international students in the classroom.

Later, the students watch the documentary 'That woman runs like a man', followed by a debate about the personal lives of the athletes who appear in it and how we can contribute, from education in general and physical education in particular, to ensuring that such situations of social do not occur.

These topics serve to complement the consideration of the development of sport, as part of the block on the history of physical education. One of the groups pays special attention to women's role in sport's development. Afterwards, their work is contrasted with that of the other groups, in which most participants are male. Later, in an activity that draws on different blocks of content, there is a debate about the stereotypes that are transmitted through corporal expression.

Specifically, in the block on corporal expression, the way in which content can be transmitted is represented and visualized in order to raise awareness of social injustice. Some of the topics worked on are violence, coeducation, and racism.

1.7. LEARNING OUTCOMES

During the teacher training process, dialogue must take place and a space made for reflection and the questioning of values (ethics, morals and justice) (Tinning, 1991). During this dialogue, the teaching role consists of promoting trust and protecting the diversity of opinions and points of view, as well as serving as a guide so that students understand the need to generate concrete instructions (Elliot, 1993). Likewise, creating an optimal environment facilitates the achievement of the proposed objectives.

During this dialogue process, in which educational objectives are included, students become aware of the elements that must be present during the teaching-learning process. Furthermore, it specifies its purpose and serves to frame educational activities in three dimensions: the cognitive (knowledge, understanding, thinking), the affective (feelings, interests, attitudes, perspectives) and the psychomotor (physical skills) (Estevan, 2019). In this sense, Bloom's taxonomy (Bloom, 1984) establishes a hierarchical order of objectives that increase in complexity as higher-order reasoning intervenes (Lewis & Smith, 1993).

This process of exchange in the acquisition of content becomes a continuous internal dialogue, favoring reflection on the what, how and why of the different elements involved in the teaching-learning process, stimulating metacognitive skills (Gallego, 2006; Hamodi et al., 2015). Consequently, this also facilitates self-analysis, control of actions, knowledge, skills and knowledge of the strategies for their development (Gallego, 2006).

Bloom's taxonomy is structured into six levels, labelled with verbs that show the performances of each level (Table 14). The more complex categories concern higher-order reasoning, and this can be induced through activities that encourage dialogue and discussion in the classroom, as well as autonomous learning. The inclusion of these methods in the teaching-learning processes and assessment systems of the different subjects facilitates will facilitate the development of student competencies.

TABLE 14. Bloom's Taxonomy.

	Level	Definition	verb sample	Sample of performances
Lower Order Thinking	Know or remember information	Students will remember or recognize information	Write Enumerate Label Name Define	Students will distinguish the different levels of thinking
	Understand concepts	Students translate, understand or interpret information based on their prior knowledge. Also, they understand concepts from the different languages in which they are taught.	Explain Resume Paraphrase Describe Illustrate	Students apply the knowledge of the 4 Cs of the CLIL methodology in the different activities
Medium Order Thinking	Apply knowledge	Students complete a task with minimal supervision	Wear Compute Solve Demonstrate Apply Build	Students will use Bloom's taxonomy when designing activities
	Analyze a situation	Students relate a hypothesis to what they already know	Analyze Categorize Compare Contrast Pull apart	There is a balance between the cognitive and emotional domains
Higher Order Thinking	Synthesize information about a given situation	Students design or create an activity	Create Plan Develop hypotheses Invent Unwrap	Students will integrate the cognitive and emotional domains in the activities
	Evaluate the information obtained	Students evaluate according to their criteria	Judge Recommend Criticize Justify	Students will assess themselves and their peers according to the established criteria

Source: Extracted from Bloom (1984) and adapted from Estevan (2019) for the context of the Physical Education lectures taught in a foreign language.

The next section describes the content of the curriculum, tailored to the target skills and learning outcomes for the students.

2. THE CONCEPT OF PHYSICAL EDUCATION AND ITS EDUCATIONAL VALUE

In the literature, we find physical education being defined from different perspectives: some place the focus on movement, while others take a more educational perspective.

Etymologically, and taking the two words that make up the semantic unit in reverse order, we find that *education* derives from the Latin verb *educare* (to guide, lead or orient), also the closely related word to *educere* (extract, take out) and *physis*, of Greek origin, was originally understood as the "principle and cause of movement and rest intrinsic to the being in which it resides" (Martínez-Gómez, 1966), with *Eidos* (appearance) and the *Dynamis* (capacity for action), standing for the body and movement.

The conceptualization of Physical Education has evolved over time, generating various definitions and enriched the field. In general terms, we can say that the traditional conceptualization is that physical education is the education of the body par excellence, with the functions of the body and soul being seen as independent. Intellectual education is the task of other "higher range" disciplines (Arráez et al., 1995).

Nowadays, this dualism has practically disappeared, with the person being seen as a psychosomatic unit requiring holistic development. Thus, physical education is seen as an area of knowledge and activity through which affective, cognitive and motor changes can be produced through movement (Arráez et al., 1995). It is also a subject in which students learn to move and move to learn (Talbot, 2001), since physical education is dynamic, changing and includes the acquisition of physical skills and also decision-making about what strategies are the most suitable for solving problems and developing well-being (Hardman, 2013). This contributes to the enrichment of the quality of life producing a 'physically educated' person (Hardman, 2013).

We can see how all these definitions have human movement in common, the topic that concerns us. Within this category, Cecchini (1996) distinguishes a more analytical approach, in which the sciences of human movement are studied from a multidisciplinary perspective, and a syncretic approach, from which human movement

is studied from various disciplines, but generating particular and specific knowledge, providing a more interdisciplinary vision.

One of the most prominent authors of the syncretic approach is José María Cagigal, who perceives a lack of recognition of physical education as a scientific field.

As we can see, throughout this construction process, physical education finds its identity in the area of pedagogical knowledge (Lleixà, 1989). In fact, despite being immersed in educational theories, physical education is a response to a specific problem and that allows us to talk about a specific science of physical education (Vicente, 1988).

To be a discipline with its own identity, we must define physical education in terms of a set of concepts that differentiate it from other disciplines (Arnold, 1991). The key must be human movement and motor skills as these are what gives it its own specificity, setting it apart from other school subjects.

Regarding the value that physical education has in the school curriculum, some educational philosophers position themselves against the educational status of physical education (Arnold, 1991), stating that physical activities do not have an educational value in themselves: they are not “serious” or “valuable”, they lack content, and their capacity for transfer to other areas of life is low. Peters' proposal, recorded by Kirk (1990), is that physical education is about “knowing how” (practical knowledge) and on physical abilities and not on “knowing what” (theoretical knowledge).

The intrinsic value of physical education and, therefore, the need for it to be a part of the school curriculum, was described by Arnold (1991), who speaks of the existence of three dimensions to physical education:

- Education “about” movement: this consists of understanding movement from the point of view of the theoretical knowledge that exists about it: it is a field of study, with a set of related concepts available to describe it, from areas such as anatomy, physiology or psychology.
- Education “through” movement: movement helps to fulfil other non-movement objectives that are considered valuable. This dimension is of a clearly instrumental nature, with physical activities being a means to achieve certain

physical, moral, intellectual, emotional or aesthetic purposes (Devís-Devís, 2018).

- Education “in” movement: this is knowledge from experience, about “knowing how”. This practical knowledge can only be obtained from participation in physical activity. This dimension finds intrinsic educational value in physical education.

For Arnold (1979; 1991), these dimensions are not exclusive and can even complement each other. Consequently, understanding physical education as a field of intellectual and academic study (“about”) or as an educational tool (“through”) are perfectly compatible with seeing education “in” movement as inherently valuable, in and of itself – certainly when taking a broad view.

Further developing this argument, Cecchini (1996b) proposed physical education as a discipline whose object of study is human motor skills and its educational dimension. Therefore, movement and education complement each other, resulting in what could be called the physical education sciences, whose object is none other than the education of human movement.

Physical education has its scientific origins in other disciplines, such as medicine, physics, mechanics, psychology and biology. The multidisciplinary roots of the discipline, Devís-Devís (1996) argued, and the scientific contributions emerging from them provide strength to what is known today as the sciences of physical activity and sport.

The educational status of physical education has improved as PE teachers now receive ongoing training, appropriate materials and facilities (Sáenz-López, 1999) are available, there is greater methodological coherence in terms of content and assessment (López-Pastor et al., 2011) and new elements have been added to the curriculum to provide learning situations that can transfer to real life (Herrero-Molleda, García-López, & Pérez-Pueyo, 2023).

A motor-literate person would demonstrate skills and knowledge in physical education that would allow him or her to respond satisfactorily to all the challenges that were put before him (Whitehead, 2001), (Figure 2):

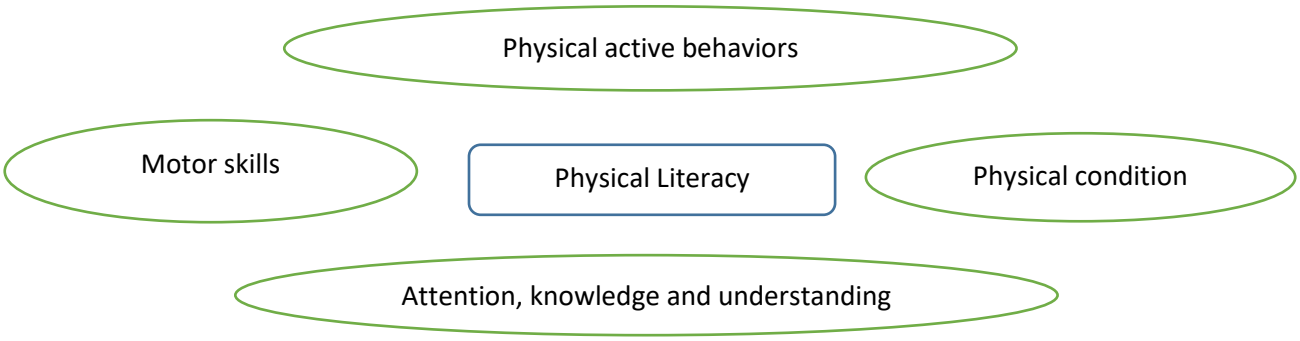

FIGURE 2. The four domains of the Canadian physical literacy assessment. Source: adapted from Tremblay & Lloyd (2010).

- Motor competence to interact efficiently with the environment, integrating motor skills and movement patterns, as well as concepts, principles, strategies and tactics related to movement, highlighting the recognition and efficient overcoming of challenging situations physically, in different terrestrial environments and in the face of different climatic adversities.
- Ability to read the environment; that is, having an understanding and responding verbally and physically to respond to what it interprets.
- Knowledge and skills to achieve and maintain a healthy level of physical activity and physical condition, having responsible personal and social behavior that respects others and oneself.
- Recognition of the value of physical activity as a lifestyle, a way to acquire health, fun, challenge, self-expression and/or social interaction.

Some more current definitions include healthy skills, competencies and behaviors, as well as psychosocial outcomes (Weiss, 2011), or the activities necessary to practice physical activity throughout life (Clark et al., 2011), something that will be discussed later in the following sections.

2.1. THE HISTORY OF PHYSICAL EDUCATION INSIDE AND OUTSIDE SCHOOLS

2.1.1. BRIEF HISTORICAL TOUR

The origins of physical education are rooted in the human beings' need to engage in survival activities in the very ancient past (e.g., hunting, fishing, fighting or war (Rosa, 1992). Nearer to the present but still a long time ago, in Ancient Greece, the culture of physicality began to be observed from the educational perspective (Pérez-Ramírez, 1992). At this time, physical education came to be considered as part of a person's comprehensive training, while also including a playful and competitive component, and the Greeks called it *Paideia,* in recognition of the intellectual, physical and organic ideal. The physical training of young people (from seven to fourteen years old) was directed by the *Paidotriba*, and complemented their intellectual training (Pérez-Ramírez, 1993) From the age of fourteen to eighteen, the training was complemented with attending the *Palestra*, a place for engaging in gymnastics, acrobatics, dance, as well as ball games (Zagalaz, 2001).

In Ancient Rome, there does not seem to have been such a defined role for physical education as in Greece. However, military training does stand out as fundamental to Roman culture, in addition to the activities involved in the spectacle of *panem et circenses*, for citizens' entertainment (Sánchez, 2020).

In medieval civilization there was no single current of philosophical or religious thought, but rather the appearance of multiple doctrines. In the 17th century, the English philosopher John Locke (1632-1704) stood out in Europe for his contribution to physical education, becoming the link between Baroque thought and the Enlightenment (Pérez-Ramírez, 1993). In some ways, his ideas were precursors of those of the later *English school.* For Locke, the objectives of physical education were: to achieve good health through the creation of healthy habits, to control the body through the formation of character and morals, and recreation through physical activities and games.

In the era of the Enlightenment, the Swiss philosopher Jean-Jacques Rousseau (1712-1778), who wrote *Emile* (1762)*,* stands out, putting forward the "natural" educational model, from which human being find happiness in nature, using nature also

to educate their senses and perception (Pérez-Ramírez, 1993). Other authors who followed Rousseau's pedagogical ideas were the German educational reformer, Johann Bernhard Basedow (1723-1790), founder of the *Philantropium institution* of Dessau, in which students complemented their intellectual training through physical exercise, manual work, music, excursions and trips abroad (Pérez-Ramírez, 1993). Likewise, the Swiss educationalist Johann Heinrich Pestalozzi (1746-1827) placed the same importance on physical education as moral education, strengthening schoolchildren's body and mind.

Of the Spanish Enlightenment, Gaspar Melchor de Jovellanos (1744-1811) stands out, pursuing the educational objective of promoting intellectual, moral and physical perfection among young people. In his treatises, he sees physical exercise as a means to form an agile and robust citizenry and promoted the need for teachers to use physical activities in public education (by walking, running, climbing, carrying objects, throwing, wrestling activities, etc.) (de Jovellanos, 1839).

After the Enlightenment, health continued to the objective of physical education and a new form of it would appear. This would be known as gymnastics, with three traditions emerging – medical, pedagogical and military – each of which would come to be associated with a particular "school". The appearance of "gymnastic schools" is linked to the social changes of the 19th century, which saw an increase in working hours, an increase in school hours, less leisure time, the expansion of cities and a reduction in free spaces (McCrone, 2014). These changes in society impacted on postural health and led to the appearance of diseases linked to a sedentary lifestyle (Parra, 2014). The gymnastic schools that appeared, known by the country with which they were most associated with, can also be distinguished by the emphasis they placed on particular approaches (Table 15).

TABLE 15. Gymnastic schools and their associated movements.

School	System	Description	Key Figures	Motion
German	Rhythmic	Pedagogical gymnastics: practical work with nature	Guts Muths (1759-1839)	from the center
		military trend	FL Jahn (1778-1852)	
French	Natural or global	Teaching through gymnastics and music Military and utilitarian gymnastics with acrobatic elements	Francisco Amorós (1770-1848)	from West
British	Sports	Incorporation of team games (fair play) and sports in physical education	Thomas Arnold (1795-1842)	sports
Swedish	Anatomical· Analytical	Therapeutic gymnastics	F. Natchegall (1777 -1847) Per H. Ling (1776-1839), H. Ling (1820-1886)	From the North

Source: adapted from Pérez-Ramírez (1993) and Estevan (2019).

The German school was dominated by the figures of Guts Muths (1759-1839) and Friedrich-Ludwig Jahn (1778-1852). Muths promoted pedagogical gymnastics, in which practical work was linked to nature (Pérez-Ramírez, 1993) and the exercises undertaken were “natural”, such as races or dances for specific educational purposes. Later on, Jahn, turned away from Muths's approach and introduced the military current, with this then becoming the German school’s predominant characteristic.

The French school was based on the work of the Valencian aristocrat Francisco Amorós (1770-1848) (Pérez-Ramírez, 1993). Exiled in France, he developed the ideas of Guts Muths, but with a military character. Among its methods, the focus on training physically and mentally strong people stands out, through strength exercises and the development of morality.

In the British school, the key figure is Thomas Arnold (1795-1842), who encouraged the playing of games and sports such as rugby in schools and higher education institutions (Pérez-Ramírez, 1993; Ferrer, 2012; Aja, 2006; Arráez, 2015; Devís-Devís, 2018). For Arnold, practicing sports encouraged organization, decision-making and respect for the rules on the part of the students.

The Swedish school was founded by Franz Nachtegall (1777-1847), Pehr H. Ling (1776-1839) and H. Ling (1820-1886), with the focus on exercises based on therapeutic gymnastics. This approach received numerous criticisms due to its rigidity (Pérez-Ramírez, 1992), including the use of static and analytical exercises.

These different gymnastic schools then fed into the characteristic gymnastic movements of the first half of the 20th century, giving rise to what we now know as physical education (Pérez-Ramírez, 1993; Boto et al., 2004; Mayor et al., 2004; Zabala, 2017).

In Spain, gymnastics began to be compulsory in 1889 (Balius, 1975), beginning with a teaching load of only two hours per week, although this suffered numerous changes, with one or two hours per week shifting between being mandatory or voluntary during the years 1894-1899 (Camps et al., 1989). Throughout the first half of the 20th century, including under Franco's regime, physical education had a military character. For this reason, the sessions were carried out with the use of "gymnastic tables" (Molina, 1999). These tables showed a clear influence from Swedish and German gymnastics, promoting values such as order, discipline and respect for authority among the students. From the 1950s onwards, individual sports of a technical nature began to be included in physical education sessions, such as artistic gymnastics or the long jump in athletics. In the following sections, we will explore some trends in Physical Education and consider the changes in legislation which have affected the Spanish educational system.

2.1.1. Trends in Physical Education

This section concerns the history of physical education from the second half of the 20th century onwards. During this period, there has been a wide variety of trends within physical education, nationally and internationally. We will also consider some of

the most recent pedagogical models and those that have acquired greater prominence during the most recent changes in society.

In Spain, starting in the 1950s, changes in society have led to new ways of understanding physical education and this has been reflected in legislation. Specifically, after the creation of a national body for sport, the *Delegación Nacional de Educación Física y Deportes*, under the leadership of José María Cagigal, and the promulgation of new educational legislation in 1970 (*Ley General de Educación*), the Spanish educational system and physical education were significantly modernized (Devís -Devís, 1994).

The 60s, 70s and 80s saw the emergence of more pedagogical trends concerning physical education aimed at providing a more comprehensive education for students. Despite this, developing basic physical qualities and sport continued to be the main focus of physical education. There are three currents stand out during this period, influencing the approach generally undertaken in Spain (Pérez-Ramírez, 1993; Estevan, 2019):

- *Educational sport*, which seeks to incorporate sports-related elements into physical education. The goal was not to imitate adult-oriented sports models but instead to adapt the sporting activities for the benefit for the students' development. Devís and Peiró (1992) showed that the emphasis on sporting performance was driven by the spectacle of sporting competitions, rather than their educational significance.

- *Psychomotricity,* a movement that originated in France during the 1950s and was adopted by the Spanish education system in the 1980s, influenced by the work of Le Boulch and Parlebás. It strives for students' holistic development rooted in a humanistic approach. In pursuit of this goal, the experiential aspect of movement is employed to enhance the development of body awareness, fundamental motor patterns, and laterality, facilitated by perceptual-motor skills. The integration of psychomotor skills continues to be a prominent feature in educational settings, particularly in early years education (as observed in García & Berruezo, 1994; Mendieta et al., 2017) and the initial stages of primary education (as evidenced by Rigal, 2006; Vivo, 2008).

- *Corporal expression* originated in the 1960s as a reaction to the mechanical approach to physical education. This movement aims to foster the growth of social abilities, creativity, communication, and meaningful movement through unstructured and spontaneous physical activities. It is deeply shaped by the desire for bodily freedom, presenting itself as a form of personal expression and individual liberty, as outlined by Montávez (2012).

In the 80s, new higher education institutions for physical education in Spain were set up (*Instituto Nacional de Educación Física*, INEF), later becoming university faculties for physical activity and sports science, with teacher training being part of their remit. With a new educational law also being promulgated in 1990 (*Ley de Ordenación General del Sistema Educativo*, LOGSE), this signified a change in the educational paradigm, democratizing it and allowing teachers to participate in its design and development (Díaz-Lucea, 1995).

Further educational trends later emerged (Zagalaz, 2001):

- *Outdoor activities*, emphasizing the significance of the natural environment in the context of physical education. The LOGSE (*Ley Orgánica de Ordenación General del Sistema Educativo*) promoted the utilization of leisure time for outdoor activities in natural settings, such as skiing, climbing, hiking, orienteering, surfing and sailing. The diversity of the Spanish landscape provides numerous avenues for different kinds of physical education activities to take place.
- *Physical activity for health* is a long-standing pedagogical trend in education (Devís & Peiró, 1992). In this educational model, teachers seek to inspire students through positive reinforcement, encouraging them to engage in discussions regarding the advantages and potential risks associated with physical activity (Evangelio et al. (2021). To achieve this, the focus is on gradually fostering students' autonomy, providing a range of activities, and promoting critical thinking among the students, (Peiró-Velert et al., 2012; Peiró & Julián, 2015).

  The implementation of this model requires specific dynamics and comprehensive units that may include cultural weeks, the reinforcement of

connections between primary and secondary education, the inclusion of marginalized groups, the implementation of self-managed projects, and the incorporation of service-learning dynamics, among other strategies (Julián-Clemente et al., 2021). Within this framework, there are projects underway to promote educational collaborative initiatives aimed at encouraging active lifestyles (Cebrián et al., 2020).

Additionally, there is a growing body of research focusing on promoting a more active lifestyle. This includes analyzing urban structures with the goal of crafting active transportation policies that support sustainability (Lowe et al., 2022). Similarly, studies centered on adolescents are emerging, exploring neighborhood structures, assessing levels of physical activity (Queralt & Molina-García, 2019), and examining their proximity to recreational areas (Molina-García et al., 2021).

- *Basic motor skills,* focusing on the development of motor competence. The aim is to aid students in acquiring various fundamental motor skills, such as locomotion and object manipulation, as well as perceptual-motor skills (Estevan, 2019; Barnett et al., 2016). This approach is rooted in the idea that motor competence can be transferred to more intricate skills, following the principle of transfer, including specific or sports-related abilities (Estevan, 2019).

  The term "basic motor skills" was first formally introduced into Spanish educational legislation in 1990 (LOGSE), and since then, its significance has been underscored by linking motor competence with other values associated with physical education and health (Cattuzzo et al., 2016).

  Currently, studies that aim to describe students' motor competence often employ tools such as pictographic scales (Estevan et al., 2021a) or conduct longitudinal research (Estevan et al., 2021; Visser et al., 2020) to examine students' self-perception in this regard.

  In parallel, there are also other trends regarding the conception of what physical education should be. There are three main visions (instrumental, experiential and sociocultural) associated with two discourses (technical vs. participatory):

· *Instrumental conception*. From a reductionist standpoint, separating the material and immaterial aspects, there is a clear distinction between the body and the

mind, a dualism of bodily and cognitive experiences. From this perspective, the body is often seen as a tool or instrument (Cecchini, 1996b). Movement and its outcomes are analyzed primarily in terms of their intended purpose and efficiency. Additionally, this perspective centers on the results to the body, with an emphasis on enhancing performance through rigorous training, as discussed by Crum (2017).

This instrumental viewpoint has been associated with teaching practices that introduce sports content without critical reflection. In these practices, physical activity is often considered solely from a biomedical or therapeutic standpoint, and class time may be used for rest, unstructured play, or performance-based assessment, lacking a formative approach to the evaluation process (Devís-Devís and Peiró, 1992).

· *Experiential conception*. This places an emphasis on detailing the experiences encountered in physical education, going beyond the mental processes involved. In doing so, it recognizes the positive effects on the affective, cognitive, and emotional dimensions. It represents a method to introduce practical rationality, with a focus on understanding the significance of and experiences in physical education (Martos-García et al., 2018).

Therefore, this experiential approach should be embraced through inclusive and comprehensive methods, in which education in values and formative assessment are integral components.

· *Sociocultural conception.* Often associated with a postmodernist viewpoint, it is closely tied to sociological approaches. In this context, the body image is perceived as a construct or representation, as discussed by Soto and Vargas (2019).

It is important to note that while these conceptions have been presented sequentially, they can also work in tandem, complementing each other and offering unique advantages, as noted by Estevan (2019). In practice, the combination of these different currents and conceptions will play a significant role in shaping the approach to the subject.

2.2. THE PHYSICAL EDUCATION CURRICULUM IN PRIMARY EDUCATION

Defining the educational curriculum is a challenging task, given the multitude of elements it encompasses. As noted by Devís and Molina (2001), it is an integral component of human existence, reflecting cultural values and representing the collective efforts of a society. Consequently, the educational curriculum is not merely an isolated entity but is seen as an integral part of social life, holding the power to bring about transformative change within that society. In this sense, Kirk (1990) proposes three elements to take into account (knowledge, interaction and context) and offers the following definition:

> The term refers to a body of knowledge, information or content that has to be communicated; that this communication will normally take place through the interactions of teachers and students (without forgetting some materials, such as textbooks, computers, etc.), and that this interaction is located in a more or less institutionalized social and cultural context (Kirk, 1990, p. 30).

The educational law enacted in 1970 (LGE) was in force throughout the first years of democracy in Spain. Although this law indicated an interest in introducing physical activity and sports content in compulsory education up to the age of 14 (*Educación General Básica*, EGB) and optional post-14 secondary education (*Bachillerato Unificado Polivalente*, BUP), this was not really acted upon. Likewise, an education law enacted in 1985 (*Ley reguladora del Derecho a la Educación*, LODE, 1985) did not include significant changes with regard to physical education.

Teachers participated in the design and development of the curriculum for the LOGSE, which came into force in 1990 (Díaz-Lucea, 1995). For the first time, physical education had a specific program for each stage of compulsory education (extended up to 16 years of age). Especially in the primary education stage, it was taught by specialist teachers (Herrador et al., 2009). In some way, the LOGSE approach considered the area of physical education from a more modern perspective, promoting individualized education and attention to students with special educational needs (SEN). Also, the LOGSE introduced new content blocks, regulated by Royal Decree 1006/1991, of June

14, establishing the basic curriculum for primary education, and Decree 20/1992, of February 17, from the Valencian government, establishing the primary education curriculum in the Comunitat Valenciana (the Valencia region). The contents were structured as follows:

- Body: image and perception
- Body: abilities and skills
- Body: expression and communication
- Body health
- Games

Subsequent to the LOGSE, several educational laws were enacted to address issues such as high dropout rates in secondary education and the insufficient assimilation of content by students. One such law was the *Ley Orgánica de Calidad de la Educación* (LOCE, 2002), which was not implemented until 2004, and then, in 2006, the *Ley Orgánica de Educación* (LOE) was introduced (Royal Decree 1513/2006, of December 7). This latter law outlined the essential curriculum for primary education, and the Communitat Valenciana established its own curriculum for primary education via Decree 111/2007, of July 20.

In the LOE of 2006, one notable innovation was the introduction of basic competencies as additional elements that complemented the objectives and assessment criteria. Another significant change was the subdivision of educational stages into three cycles of two years each. The content blocks were organized as follows: [Further details can be provided if needed.]

- The body: image and perception
- Motor skills
- Artistic-expressive physical activities
- Physical activity and health
- Games and sports

In 2013, the *Ley Orgánica para la mejora de la calidad educativa* (LOMCE) was introduced. This law made a distinction between core and specific subjects, considering Physical Education as one of the specific subjects. In the LOMCE, certain elements of the

curriculum, such as learning standards, were established by the central government, while the specific content within various subject blocks was determined by regional authorities (*autonomías*).

One significant feature of this law was the introduction of learning standards, which served as the objectives to be attained, as proposed by the government (Molina et al., 2016). Until the 2021-2022 academic year, the reference documents for programming the curriculum for the subject of Physical Education were, at a national level, Royal Decree 126/2014, of February 28, establishing the basic curriculum for Primary Education, and Decree 108/2014, of July 4, in the Comunitat Valenciana. The content structure was very similar to the previous one, with the names varying slightly:

- Knowledge and personal autonomy
- Motor skills, coordination and balance. Activities in the natural environment.
- Motor expression and communication
- Physical activity and health
- Games and sports activities

Currently, the law underpinning the teaching of the subject of Physical Education in primary schools is Organic Law 3/2020, of December 29 (known as LOMLOE), which amends the LOE of 2006. In the Comunitat Valenciana, the specific details related to curriculum elements in primary education are outlined in Decree 106/2022, of August 5.[6] This law introduces various provisions and modifications in the domain of physical education.

[6] DECRETO 106/2022, de 5 de agosto, del Consell, de ordenación y currículo de la etapa de Educación Primaria [2022/7572]

2.3. General Characteristics of Decree 106/2022 Regarding the Organization and Curriculum of Primary Education

This decree makes some changes to elements of the curriculum with respect to previous laws. The first change of interest is the linking of the subject of physical education with foreign language learning due to the international history of the field and humankind's shared motor culture. The law also links the subject with artistic education, finding links in expression and movement linked to dance, and with education in 'values', including movement and action linked in three areas: the personal environment, that of one's close associates and the wider collective. Thus, physical education concerns issues such as:

- Emotional management skills
- Resolution of conflict through dialogue
- Reflection on stereotypes
- Cooperation
- Equality based on social justice
- Co-education
- Gender diversity

The aim of this is to create a social and cultural identity, promoting a participatory, responsible, inclusive and critical citizenship connected with the immediate and global environment.

2.3.1. Key Concepts

As has been indicated in the previous section, the current curriculum includes a number of important concepts such as 'learning situations', 'knowledge', and also 'specific competencies', 'key competencies', or assessment criteria' and the Decree specifically relates them to each other. This section provides a synthesis of the most notable of these, as they also form an important part of the Didactics of Physical Education in Primary Teaching course, with the aim being to facilitate the design and implementation of learning units for the students.

2.3.2. LEARNING SITUATIONS

The curriculum introduces the concept of learning situations, in which competencies can be developed nature, and it includes a series of didactic guidelines shown below:

- *Teaching-learning itineraries*, overcoming individual motor problems, and motor problems considered from the perspective of opposition, cooperation and collaboration and opposition simultaneously, in the natural and artistic-expressive environment.
- *Varied and safe spaces* that guarantee safety and preservation from an eco-social perspective. Some examples are: urban (parks, streets, bike paths, theaters, etc.) and rural and natural (forests, trails, greenways, mountains, rivers, beaches, etc.) that guarantee situated and meaningful learning.
- *Creativity and artistic expression*, which encourages divergent thinking.
- *Physical literacy,* to achieve significant learning that, from a holistic perspective (motor, cognitive, emotional and social), integrates healthy habits.
- Self-regulation and internalization of learning through *teaching styles and pedagogical models*, placing the spotlight on the students, as well as strategies that favor the resolution of challenges.
- The *motivational style* of the PE teacher, taking into account the social interactions and psychological needs of the students (competence, autonomy and relationship with others), and impacting on the affective, cognitive and behavioral spheres.
- Application of a variety of *pedagogical* and methodological approaches that will take into account the recreational component, and that benefit students inside and outside of curricular time.
- *A coeducational and inclusive* approach in activities, taking into account sexual and gender diversity, dealing with stereotypes and transgender reality from a social justice perspective.
- The inclusion and participation of all students in accordance with the principles of *universal learning design* (UDD), through the defense of spaces and tasks accessible from all areas (sensory, intellectual and emotional).

- Action*, reflection and critical thinking* about the learning process through participation and *formative and shared evaluation strategies* (self-assessment, peer assessment, and more traditional teacher-student assessment) that help students to get involved and gain feedback to improve their development.
- Active participation in *sociocultural and artistic-expressive* proposals, through which a critical spirit will be developed to inform their perception of situations of harassment, bullying and social exclusion, through institutional programs and other projects related to physical activity, movement and health.
- The *global view* beyond the individualistic view, with the aim of contributing to the community through cooperative methods that promote social and individual commitment linked to sustainable development objectives.

The decree emphasizes health and well-being, quality education, gender equality, sustainable cities and communities. Some suggestions are service-learning projects, or collaboration with local and global entities and organizations that address social and environmental aspects (for example, NGOs, city councils, recycling plants and natural sites in the nearby environment), aimed at addressing the challenges of the 21st century.

In short, the goal is to create learning situations that are meaningful, functional, transferable, reflective, that promote autonomy and pose challenges. Likewise, they must be relevant to the students and the real context of the students' activities. This is possible through reflection on their learning process and encouragement of a critical spirit in society. In some ways, the aim is for students to become aware of what they learn and how they learn it. To this end, autonomous practice is recommended, so that students have greater responsibility for their decision-making process.

In the same way, the curriculum includes a series of specific competencies, in addition to the key competencies to be developed through 'knowledge', corresponding to what is traditionally called 'content'. Unlike previous educational laws, this 'knowledge' is not closed off from other areas and is related to other activities that draw on the knowledge of previous content blocks.

2.3.3. KNOWLEDGE

Another key feature of the curriculum is 'knowledge', which is broken down into three two-year cycles: the first, second and third cycles. Specifically, the curriculum aims to develop content in terms of the following six blocks:

- Block 1. Active and healthy life. From a physical, mental and social perspective and oriented towards the identification of healthy behaviors.
- Block 2. Organization and management of physical activity. Proposing the planning of physical activity based on healthy, safe criteria and preventing injuries.
- Block 3. Problem solving in motor situations. This addresses physical condition, perceptual-motor abilities, motor skills in play situations, as well as decision-making. Individual motor situations, cooperation with others, opposition to others and a combination of collaboration and opposition are proposed.
- Block 4. Emotional self-regulation and social interaction in motor situations. This block includes emotional management and social skills, as well as conflict resolution from an inclusive and non-discriminatory approach.
- Block 5. Manifestations of motor culture. This concerns artistic expression, communication with the body and movement, as well as the sport of *pilota valenciana* as an activity of cultural interest.
- Block 6. Efficient and sustainable interaction with the environment. This comprises the knowledge and practices that can be developed by interacting with the variety of situations offered by the environment, fostering an appreciation of natural, urban and cultural heritage, and giving consideration to the environment and sustainability, and safety.

2.3.4. SPECIFIC COMPETENCIES

This concept of specific skills or competencies (*competencias específicas, CE*) has appeared for the first time in the educational curriculum, complementing the generic key competencies of this stage of education. Below are the six CEs from the Decree 106/2022:

- CE1: *To identify and incorporate basic healthy habits into daily life and to have an active lifestyle, by carrying out regular and appropriate physical activity.* It thus concerns healthy habits and an active lifestyle and is transversal in nature.
- CE2: *To show awareness and control of the fundamental elements of the body when dealing with a variety of motor situations, from a critical perspective.* This competency concerns the development of motor skills, physical condition, perceptive-motor abilities, and enables participation in artistic-expressive and physical activities in a given environment.
- CE3: *To resolve movement challenges and situations using physical, perceptual-motor and motor skills, in different contexts of daily life through physical activity and games*.
- CE4: *To participate in the execution of artistic-expressive activities with aesthetic and creative contributions using the basic expressive resources of the body and movement.* This competency concerns artistic-expressive content (perception, awareness and control of one's own body), including active participation and interaction with cultural and natural heritage, through physical and artistic-expressive activities in the environment.
- CE5: *To participate actively in the exploration of the natural and cultural heritage of the environment, through guided physical and artistic-expressive activities, taking on individual and collective responsibility to foster a safe and respectful interaction with the environment.* This competency links with natural and cultural heritage, as well as physical and artistic-expressive activities in the environment.
- CE6: *To identify and explore technological resources related to physical activity and health, using them responsibly and safely, under the supervision of the family and school*. This competency concerns the responsible and safe use of technological resources related to physical activities, having a transversal nature with the rest of the

specific competencies of the area and with the rest of the areas of the curriculum.

2.3.5. KEY COMPETENCIES

The key skills or competencies are similar to those that appeared in previous summaries, although with some variations:

CCL: Skills in linguistic communication, regarding oral and written interactions in different contexts.

CP: Multilingual skills, involving the use of different languages and respect for the different cultures that coexist in society.

STEM: Skills in mathematics, science, technology and engineering, including the development of mathematical reasoning, the understanding of the natural and social environment, and the application of scientific knowledge, pursuing the transformation of society safely, responsibly and sustainably.

CD: Digital skills, involving the use of technologies in a safe, healthy, sustainable, critical and responsible way. This also refers to information and data literacy, and the creation of content from a critical perspective.

CPSAA: Personal, social and learning-to-learn skills, enabling self-reflection, self-acceptance and continuous personal growth.

CC: Citizenry skills, contributing to the exercise of responsible citizenship and full participation in social and civic life.

CE: Proactivity, anticipating needs and opportunities, analyzing the environment, using the imagination, showing creativity, thinking strategically and reflecting on issues from an ethical, constructive and critical perspective.

CCEC: Skills in cultural awareness and expression, understanding that different emotions can be expressed creatively, involving a wide spectrum of cultural and artistic manifestations.

The decree also shows the relationship between specific competencies and key competencies and should serve as the basis for planning the teaching of the subject.

2.3.6. ASSESSMENT CRITERIA

In the decree, the assessment criteria are linked to the specific competencies previously shown. Here is an example of one of the assessment criteria for two (Table 16).

TABLE 16. Assessment criteria for the 4th and 6th years for Specific Competency 1 (CE1)

Specific Competency 1: To identify and incorporate basic healthy habits into daily life and have an active lifestyle, through regular and appropriate physical activity.	
4th year (2nd cycle)	6th year (3rd cycle)
1.1. To incorporate healthy habits related to physical activity and nutrition, contributing to the improvement of physical, mental, and emotional health, and to identify the main negative effects of an unbalanced diet.	1.1. To adopt healthy habits related to physical activity, diet, and good posture that contribute to an improvement in physical, mental, and emotional health, recognising the negative effects of a sedentary lifestyle and harmful behaviours, in addition to valuing the benefits that a healthy lifestyle brings.
1.2. To gradually incorporate activities to promote good posture hygiene and accident prevention.	1.2. To implement accident prevention measures and action protocols when accidents occur.
1.3. To execute the phases of activation and cooling down through routines in daily physical activities.	1.3. To independently incorporate activation and cooling-down phases in physical activities, relating them to physical condition, and thus internalising these routines as a healthy and responsible motor skill habit.
1.4. To learn the habit of performing physical activity, through basic exercise routines and games that promote self-knowledge and harmonious interaction.	1.4. To perform physical activity on a regular basis, in the form of exercise routines, games, or pre-sports activities in individual and collective situations that promote harmonious interaction and coexistence.

2.4. PEDAGOGICAL MODELS AND TEACHING METHODOLOGY

Pedagogical models encompass comprehensive teaching approaches designed to align learning outcomes with students' needs and the instructor's teaching style. This integration of teaching styles into pedagogical models is a fundamental aspect of the teaching and learning process (Casey, 2016; Fernández-Río et al., 2016).

Teaching styles were classified by Mosston in 1966, and this classification has been added to since then to include teaching models (Joyce & Weil, 1972), curricular models (Jewett & Bain, 1985), instructional models (Metzler, 2005), and pedagogical models (Kirk, 2013).

Within the realm of teaching methodology, methodological strategies, or specific approaches to teaching, are typically labelled as teaching styles and teaching strategies in practice. Teaching styles pertain to how content is communicated, organized, and structured (Molina, 1999).

According to Mosston's classification, different learning styles exist, and it is important for educators to become familiar with each of them so they can adapt their teaching approach as needed. These learning styles encompass various aspects of educational practice, including communication, organization, task type, and student participation levels (González-Peiteado, 2013). Mosston's classification of teaching styles ranges from minimum to maximum independence for students, with Table 17 providing an overview of these styles.

TABLE 17. Learning styles, based on Mosston's (1966) classification.

Style Name	Characteristics
Command (Style A)	The acquisition of content occurs through memorization and repetition. The teaching staff plays the leading role and selects the content.
Practice. Task-based teaching (Style B)	The role of the teacher consists of making all the decisions and assigning tasks that the students carry out in a unit of time.
Reciprocal. (Style C)	It is based on the idea that the sooner students know about their mistake, the sooner they can correct it. In this style, the group is organized in pairs, assigning the roles of performer and observer.

Self-check (Style D)	In this style, students carry out the tasks in the same way as in practice, subsequently making decisions for themselves.
Inclusion (Style E)	In this style, multiple levels of execution of the same task are included. The teaching role consists of making all the decisions until the execution of the task, where the students make the decisions according to their level of ability to carry out the task. Subsequently, the students evaluate their performance and decide at what level to continue.
Guided discovery (Style F)	In this style there is an exchange of questions between the students and the teacher, whose cumulative effect leads to the discovery of concepts, principles or ideas of the students.
Divergent discovery - problem solving (Style G)	Here, students have autonomy to make specific decisions on a chosen topic. This style is similar to the previous one in terms of its structure: cognitive dissonance, inquiry, discovery. In the prior phase, the teachers select the contents and, once the dynamics are proposed to the students, they have the opportunity to investigate, explore, design, move around and evaluate the alternatives.
The learner-designed individual program. Student Design (Style H)	In this style, the students discover and design the question or problem. The teaching staff decides the content and topic to be covered, with the students being the ones who make the decisions about the questions (problems) and the multiple solutions, organizing them by categories, themes and objectives, constituting an individualized program that the student has discovered and designed. This program guides the student in the execution and development of the specific topic.
Learner-initiated (Style I)	The students go to the teachers to tell them that "I want to be in the style for initiated students, I am prepared to design my own problems and look for their solutions." In this way, they make all the decisions in the pre-implementation phase, as well as in discovery and execution. The students', therefore, is to discover and examine solutions.
Self-teaching (Style J)	This style is not carried out in a classroom, but outside of it, with the learner making all the decisions that would normally be made by teachers and students.

Building on this classification by Mosston (1966), Delgado-Noguera (1991), groups teaching styles according to the following characteristics: traditional (direct instruction and assignment of tasks), encouragement of individualization, participatory, promotion of sociability, encouragement of students' cognitive involvement students, and stimulation of creativity.

Of these styles, Delgado-Noguera (1991) highlights the importance of combining the following elements, when selecting the teaching style for the transmission of knowledge: 1) student participation in the teaching design itself, 2) design of meaningful learning, 3) promotion of inquiry and exploration, 4) promotion of collaboration for tasks and correction processes, 5) cognitive involvement, 6) promotion of group work, 7) promotion of student creativity, 8) encouraging self-assessment, 9) taking into account students' learning styles.

With regard to learning styles, teachers have control over all decisions that affect the teaching-learning process; that is, about what is going to be taught or the way in which it will be carried out (Contreras, 2000). Sicilia-Camacho and Delgado-Noguera (1992) distinguish between:

- Traditional styles (direct command, task assignment), in which the teacher directs the teaching session.
- Individualizing styles (individual programs, level or interest groups, modular teaching), which take into account students' individual characteristics.
- Participatory and socializing styles (reciprocal teaching, micro-teaching, inferred groups, group dynamics), which are characterized by the fact that students adopt the characteristics of the group they are in, so that there is greater participatory involvement and interpersonal relationships are encouraged.
- Cognitive styles (problem solving, guided discovery), in which students use critical thinking, so that the students are the ones who seek or discover solutions to problems posed by the teachers; that is, they are direct participants in the teaching-learning process.
- Creative teaching styles (synectics), in which the students are participants in the entire process from the moment of planning and choosing content up to assessment.

Later, at the international level, Kirk (2013) discussed a models-based approach in physical education that offered two potential solutions for the problem that the field poses for the philosophy of education: "sport education" and "physical literacy". Such models, he argues, provide a variety of beneficial educational results for students, highlighting the need to go further in the use of physical education techniques. Along

these lines, Metzler (2005) also proposes eight models to offer a variety of possibilities to the teaching-learning process in Physical Education, among which are:

- *Direct Instruction*, in which the teacher is the leader.
- The *Personalized System for Instruction,* in which the students' progress should go as fast as they can or as slow as they need.
- *Cooperative Learning,* through which students learn with, by and for each other.
- *Sport Education,* through which students learn to be competent, educated and enthusiastic about sports.
- *Peer Teaching,* where students teach their classmates reciprocally.
- *Teaching through inquiry,* in which the learner solves the problems that arise.
- *Tactical Games,* teaching games for understanding.
- *Teaching for Personal and Social Responsibility*, integrating, transferring and empowering the relationship between students and teachers.

Taking this and other models, Fernández-Río et al. (2016) make a classification of the basic and emerging pedagogical models, summarized in Table 18.

TABLE 18. Basic and emerging pedagogical models (Fernández-Río et al., 2016a).

	Basic pedagogical models
Cooperative learning	Attributing specific roles to team members, thus obtaining positive interdependence, promoting interaction, individual responsibility, group processing and social skills (Johnson et al., 2013).
Sport Education	Focused on teamwork and student autonomy (Siedentop et al., 2019), this is structured in four phases: 1) practice directed by the teaching staff, 2) autonomous practice, 3) formal competition, applying the skills acquired in the previous phases, 4) final recognition.
Teaching Games for Understanding	In the beginning, the aim of this was to understand the structure, tactics and necessary skills of sports (Bunker & Thorpe, 1982). The benefits of its use are: 1) the transfer between sports, 2) the representation of "adult" models, 3) the modification of games to make their tactical structure visible, 4) additional tactical complexity can be more easily assimilated by the students, 5) the evaluation of "sports competition" in isolated situations artificially created by the teachers. Its phases are divided into: 1) presentation of the modified "adult sport" as a game, 2) the understanding of the game by the students, 3) the awareness of the tactical elements, 4) decision making, 5) the execution and improvement of the game, 6) practice (technique and tactics) in that game or in another more developed version.
Personal and social responsibility	Focused on enhancing the abilities of students through the values implicit in society. This model has 5 levels of goal achievement (Hellison, 2003): 1) respect for the rights and feelings of others, 2) participation through positive experiences, 3) autonomy through decision making. and reflection, 4) empathy and leadership, 5) applying what was learned to other contexts.
	Emerging models
Adventure education	Students participate in adventure activities that require physical, cognitive and affective skills (Dort et al., 1996). Its fundamental characteristics are: 1) problem solving, 2) overcoming barriers, 3) cooperation to overcome barriers, 4) creative use of spaces and materials, 5) the recreational context in which the activities are carried out.
Physical literacy	The concept concerns the usefulness of physical activity to maintain appropriate levels of activity throughout life (Whitehead, 2010). The strategies that stand out from this model are: 1) fun, intrinsic motivation, 2) diversity of interests, 3) understanding of the contents, 4) character, applying real-life skills such as cooperation or teamwork, 5) individual ability, 6) development of physical

Basic pedagogical models	
	condition, 7) imagination, promoting creativity, 8) perseverance, 9) modeling, promoting comprehensive training and development.
Attitudinal style	This model establishes attitudes as a fundamental element to improve learning and achieve greater motivation in PE (Pérez-Pueyo, et al., 2011). Specifically, it concerns three dimensions: 1) intentional bodily activities, 2) sequential organization towards attitudes, 3) final assemblies (Pérez-Pueyo, 2005).
Ludo-technical model	This is based on Skinner's operant conditioning theory (modelling, exemplification, practice, feedback and reinforcement), constructivist learning (building learning on prior knowledge) and social learning (learning in interaction with the context and people in it) with the aim being to gain technical skills by understanding them (Gómez-Marmol, Calderón-Luquin, and Valero-Valenzuela, 2014). It is structured in terms of four phases: 1) presentation of the issue and setting of challenges, 2) ludo-technical proposals that promote technical learning through play, 3) global proposals, which imply the global execution of the target technique, 4) reflection and feedback.
Self-construction of materials	Based on the constructionist theory of learning, which holds that, to build knowledge, students must build artifacts that they can share with others. The materials can be built in the PE classroom, in other subjects or outside of school hours.
Education for health	The key idea is that students should have a physically active life (Siedentop, 1996). Therefore, the teaching-learning process must include the knowledge and importance of physical activity (McKenzie et al., 2009), so that students can organize their lifestyle (Whitehead & Fox, 1983) autonomously.
Hybrid models	Evidently, this consists of combining elements from different pedagogical models, but with underlying perspectives: a) situated learning (connecting students, content, knowledge) (Lave & Wenger, 1991), b) student-centered teaching (Metzler, 2005).

Other more recent models, such as movement-oriented practice (Lindgren & Barker, 2019), or nonlinear pedagogy (Davids et al., 2005; Chow et al., 2007) mention the possibilities of self-improvement itself through practice, in the first case, or the emergence of creative responses to the restrictions that may be proposed in the tasks, individuals or environment, in the second case (Newell, 1986).

The teaching methodology is a fundamental part of the teaching-learning process, since you must not only take into account what you want to teach, but how you

want to do this. In this sense, Carrasco (2000) defines teaching methodology as the rational organization of teaching resources, techniques and procedures, in order to achieve student learning. Teaching methodologies include the methods, strategies and teaching resources that are used during the practice of teaching.

The teaching method refers to the set of procedures and techniques used by teachers to teach, thus determining the path towards achieving the educational goal (Blázquez, 2017; Molina, 1999). There are two types of method: deductive and inductive, whose suitability will depend on the context and environment of the teaching staff. As in the field of research, the deductive method starts from the general, trying to build on this to achieve particular conclusions. An example is this method is the traditional lecture (Molina, 1999). In contrast, the inductive method operates from the particular to the general. In the university setting, the inductive method seems more appropriate, as it encourages students to formulate different possible responses to a problem. However, the deductive method is also necessary, especially when the aim is to achieve in-depth knowledge within a set time, as may be the case with a lecture. For this reason, there are no better or worse methods, but this clarifies the different possibilities that exist for teaching (Molina, 1999) and one can opt for those that result in higher levels of student participation.

As previously mentioned, in recent years, there has been a move away from discussing teaching styles towards a focus on pedagogical models, since the latter take into learning and the students' role into account, as well as teaching (Fernández-Río & Méndez, 2016). The same has happened with approach concerning the teaching-learning process, with the advocation of active and participatory methods, whose benefits are clear (Díaz et al., 2020):

- Student-focused teaching, which takes their previous knowledge and transforms it into new knowledge.
- The importance of the experience that comes from observation and action in a specific context, which favors discovery learning.
- Students' active role of the students in the process of constructing new learning, as well as the role of the mediator.

For all this, Blázquez (2017) highlights the importance of these experiences for direct learning, in scenarios that allow students to: 1) face real-life situations, 2) meaningfully apply and transfer knowledge, 3) develop skills and build a sense of personal competence, 4) manage social situations, linking thought with action, 5) reflect on values and ethical issues. Therefore, authentic physical education must be supported by a range of strategies focused on experiential learning. Blázquez (2017) summarizes a range of teaching methods, as can be seen in Table 19:

TABLE 19. Teaching methods proposed by Blázquez (2017).

Problem-based learning	**This involves presenting a problem, identifying learning needs, searching for the necessary information and, finally, returning to the problem to solve it.**
Project Learning	The central idea is to bring together school knowledge, social knowledge and real life, in such a way that students do not feel that they are learning things in an abstract and analytical way, but with a clear and authentic purpose.
Challenge-based learning	This approach actively involves students, mobilizing their critical, reflective and civic attitudes. The students try to find a solution to a real, important problem linked to the environment (not a problem designed for the classroom), requiring the definition of a challenge and the implementation of a solution.
Cooperative learning	In this method, students are organized into small groups to complete tasks, and the responsibility for the teaching and learning process does not fall exclusively on the teachers, but on the students as a whole.
Case method	This is a simulation technique used to develop the ability to put knowledge or skills into practice.
Service Learning	This approach combines the academic curriculum with community service.
Learning environments	These are spaces in which students interact under physical, human, social and cultural conditions and circumstances conducive to generating significant and meaningful learning experiences.
Learning agreement	The aim is to change the relational parameters of discourse, between what is taught and what is learned, in such a way that implicit norms are replaced by explicit norms and control by the teacher is replaced with student autonomy, thus allowing a "diversified classroom" to emerge.
Motor creativity. Body synectics	This is the human capacity that allows people to make valuable innovations and solve motor problems in a novel way.
Flipped classroom	In this approach, part of the teaching-learning process is moved outside the classroom in order to use class time for more complex teaching activities that promote meaningful learning.
Educational gamification	It is the use of game elements in non-playful contexts. For example, introducing elements and structures specific to games, such as a set of rules, competitions or prizes, to motivate the active participation of the people involved.

In this course, a hybrid model is used, based on cooperative learning, physical literacy, nonlinear pedagogy, the flipped classroom and experiential learning, due to the importance of the acquisition of content. On this basis, during the 2020-2021, 2021-2022, 2022-2023, and 2023-2024 academic years, four innovation projects have been carried out in a collaboration involving teaching staff from diverse departments of the Universitat de València and the Universitat Jaume I of Castelló. These innovative practices respect the interdependence between the contents, as well as the environment in which the teaching-learning process occurs (Fernández-Río et al., 2016; Fernández-Río & Méndez-Giménez, 2016; Haerens et al., 2011; Rovegno & Dolly, 2006).

In the university environment in which we find ourselves, a focus is placed on active methods that stimulate experiential learning in students, based on the works of Dewey (1928), Lewin (1951) and Piaget (1970), thus involving the acquisition, manipulation and memorization of abstract symbols. It is, therefore, a theory with a holistic, integrative perspective on learning, which combines experience, perception, cognition and behavior (Kolb, 1984; 2014). During the transmission of possible experiential content that students can apply, special mention is also made of service-learning, as this is the main focus of the research, in collaboration with RIADIS (https://riadis.es/), a research network regarding service-learning in physical activity and sport with the aim of promoting social inclusion. This is an experience-based approach to education, in which the teaching-learning process is based on social needs which the students reflect on (Eyler & Giles, 1999). The aim is for students to apply their skills and understanding of curricular content in a real environment, learning through experience and achieving a social benefit (Furco & Billing, 2002). In other words, service-learning is a methodology that encourages the development of knowledge and skills by providing a service to the community (Tapia, 2008).

In the university environment, its use has grown exponentially in recent years, especially in the context of the Sustainable Development Goals (specifically, number 4), in the United Nations Education 2030 Framework for Action. There have been numerous prestigious international publications exploring its used in the university environment, specifically in the area of physical activity and sport (Capella et al., 2020; Chiva-Bartoll

et al., 2021; 2020; 2019 ; 2018; Gil-Gómez & Chiva-Bartoll, 2014; Gil-Gómez & Maravé-Vivas, 2018; Lleixà & Ríos, 2015; Maravé-Vivas et al., 2020; Rivera et al., 2020; Ruiz-Montero et al. ., 2019; 2022; Salvador-Garcia et al., 2022; Santos-Pastor et al., 2017; 2018; 2020; 2021; Zorilla et al., 2019; Valverde-Esteve et al., 2020; 2021). The approach thus contributes to the development of social and civic competence (Gil-Gómez et al., 2016), critical pedagogy (Chiva-Bartoll et al., 2016) and the formation of an effective personality (Chiva-Bartoll et al., 2018), among its numerous benefits.

Its main use in the Didactics of Physical Education in Primary Teaching course has concerned inclusion (Carrington & Saggers, 2008), diversity (Mitton-Kükner et al., 2010), multiculturalism (Barton, 2000, Peralta et al., 2016), cultural understanding (Conner, 2010; Meaney et al., 2012) and the practice and acquisition of values (Carrington, 2011; Chambers & Lavery, 2012). This is reflected during the course through debates and feedback at the end of the sessions, with especial regard to methodology and attention to diversity.

2.5. ASSESSMENT[7] [8]

Assessment is one of the most complex issues in teaching (Perassi, 2008), and it has been widely discussed within the physical education field (Blázquez, 1990; Delgado-Noguera, 1991; Lucea, 2005) and in the university environment (López-Pastor, Pascual, Martín, 2005; López-Pastor et al., 2007; Vernetta, López and Delgado, 2009; Fernández, 2009; Martínez, Martín and Capllonch, 2009; Fraile-Aranda, 2013). Within the current system, in which we focus on the acquisition of skills (Marqués-Blaquè, 2009; Alles, 2002; García, 2008; Fernández, 2009; March, 2010), methodology (Ortuño et al., 2009; de Miguel, 2005; de Miguel et al., 2006) and students' work (Hortigüela-Alcalá, Pérez-Pueyo and López-Pastor, 2015), we must reflect on and rethink the concept of the assessment of students - during the teaching-learning process (Gessa-Perera, 2010).

The learning cycle includes five stages: engagement, exploration, explanation, elaboration and evaluation (Lawson, 1995; Talanquer, 2005). There is, therefore, a close relationship between the type of assessment used and the method through which students acquire content (Álvarez, 2005; Hamadi, López-Pastor, López-Pastor, 2015). Taking into account that assessment should stimulate learning, Álvarez (2008) points out three aspects to keep in mind: assessment tasks can be a means of learning, students should be involved in the assessment process and feedback can be provided on the basis of the results of the assessment. This strategy can improve learning, promote students' critical thinking and improve teaching practice (Álvarez-Méndez, 2001).

In this sense, in formative assessment the teacher adapts his or her pedagogical action to suit the students' learning processes and the problems they experience (Allal, 1980; López, 1981; Álvarez-Méndez, 2001; Martín et al., 2006). During this process, the development of understanding and elaboration of thought takes place, meaning that the teacher should be continually at the service of improving the students' efforts (Álvarez-Méndez, 2001). The teacher's role, therefore, is to clarify learning intentions, to engineer effective class discussions and other tasks that demonstrate the students' understanding and provide feedback that pushes students forward (Black and William,

[7] This information was obained from Valverde-Esteve (2019). Peer evaluation: A Practical Experience in Didactics of Physical Education. *Education and law review, 19*, 1-11.

[8] You can find more information in this website: https://redevaluacionformativa.wordpress.com/

2009). Consequently, both the assessor and the students understand and share the learning intentions and the criteria to achieve success.

Formative assessment is defined as a process of "confirmation, assessment and decision-making whose purpose is to optimize the teaching-learning process that takes place, from a humanizing perspective and not as a mere qualified end" (López-Pastor et al., 2016: 149). There are many recent pedagogical studies which confirm that there are several nuances to what assessment is, such as the moment chosen, the person who assesses or the reason why an assessment occurs. All of this makes it a complex process, which goes beyond the formality of providing a mark or grade, and it is important for it to be learning-oriented – indeed, it is often referred as to "assessment for learning" (Brew et al., 2009).

On this theme of using assessment to improve student learning, Álvarez (2008) emphasizes that the way in which students are assessed can condition how they learn. This highlights the importance of coherence between all the elements of the curriculum.

This activity of content acquisition and exchange becomes a continuous internal dialogue, forcing reflection on what, how and why students become aware of their own learning, and this also stimulates metacognitive skills (Gallego, 2006; López-Pastor, López-Pastor, 2015). Consequently, this strategy encourages self-analysis, control over one's actions, knowledge, skills and awareness of the strategies for acquiring them (Gallego, 2006), helping students in their knowledge construction process (Sanmartí, 2007).

In line with what is suggested in the pedagogical models and teaching styles shown in the previous sections, during the assessment process, we will try to involve students actively, providing them with strategies that allow them to make a critical judgment about what the tools are that promote meaningful learning to a greater extent (Dyson et al., 2004).

In the pursuit of meaningful learning, the focus of the assessment process will be directed towards the acquisition of content by students (Black & William, 2009; Tolgfors et al., 2018). In this process, the assessment approach will be carried out from a

constructivist perspective, in which the students will take the lead in their own learning and also in the assessment process.

At this point, it important to stress that there are different types of assessment, depending on the moment at which it takes place and on who the participants in process are (Jorba & Sanmartí, 1996; López-Pastor, 2009; López-Pastor & Sicilia-Camacho, 2017).

Regarding the moment in which assessment takes place, three types can be distinguished (Jorba & Sanmartí, 1996):

- *Predictive or initial assessment.* Its function is to determine the characteristics of the students prior to beginning an educational program. In this course, the initial assessment of prior learning is complemented with a life history, so that the instructors and other students are aware of the experiences that each student has had before beginning. In this experience, positive and negative memories are shared, in order to bring the Didactics of Physical Education in Primary Teaching course closer to the students, making it more meaningful. Specifically, the "life story" enables the students to reflect on their connection to the course and describe their level of knowledge in the theme of the course through questions posed by the professors.

- *Formative assessment.* It has been defined as an assessment process whose purpose is to improve the teaching-learning process (López-Pastor & Pérez-Pueyo, 2017: 36). We can adjust this definition to clarify that it allows us to determine what difficulties learners experience in the learning process (Allal, 1980; Álvarez-Méndez, 2001) as well as the degree of assimilation of the content, thus facilitating future improvement of our educational strategies. In this program, formative assessment is particularly used during the three tutorials, with students submitting sections of their group assignments and receiving feedback on them, enabling them to improve their final submission (Black & William, 2009).

- *Summative or final assessment*. This occurs at the end of the educational process. Its objective is to verify the achievement of the proposed learning outcomes: it measures achievement. In this program, it is the type of assessment that occurs at the end of the course.

Given the close relationship between the type of assessment, the content and method through which students acquire the content (Álvarez, 2005, Hamodi et al., 2015), and the benefits of students' active participation (Tan, 2008) to make their learning meaningful (Díaz, 2003), it is right to detail the assessment strategies used in the Didactics of Physical Education in Primary Teaching course.

When training process of future primary school teachers, it is especially important to raise awareness of formative assessment and to experience it from different perspectives. Peer-assessment evaluation is one such method, enabling them to learn to assess from an objective and valid perspective, adapting as necessary to different learning situations (Gallego, 2006). In this way, our aim is to stimulate higher-order thinking (Lewis and Smith, 1993), which has four key stages deriving from experience, in private and shared dimensions (Garrison, Anderson and Archer, 2001). The first stage is the triggering event, in which we find the dilemma or discover the problem which needs to be resolved emerging from our experience. The second stage, exploration, is characterized by a search for possible solutions and is, therefore, a phase of exchange between the private dimension and the shared social dimension that encompasses the exploration of ideas. In the third stage, integration, the meaning of the ideas generated in the exploratory phase is constructed. Finally, the resolution of the dilemma or problem requires the implementation of the proposed response (Garrison et al., 2001). In the literature reviewed (Bartlett, 1958; Resnick, 1987; Newman, 1990), we find that this differs from lower-order thinking (Maier, 1933; Bartlett, 1958; Resnick, 1987; Newman, 1990), in that higher-order thinking is capable of integrating the parts that make up the complexity as a whole, facilitating an experience that fills in those gaps that may have been left pending, although both types of thinking can be integrated simultaneously (Resnick, 1987).

During this process, Lewis and Smith (1993) describe five features of their definition of higher-order thinking which teacher should remember, with the most important of these being that that the opportunity to develop higher-order skills is something that all students must have, as they are required throughout life to solve problems efficiently.

In order to bring students closer to a holistic vision of teaching and, therefore, of the assessment process in the Didactics of Physical Education in Primary Teaching course, the formative and shared assessment is used. In the next section, the main types of written tests are shown.

Written tests can be presented in different forms:

- Those with a *structured response* are objective tests, made up of a large number of questions with a selection of possible responses provided. These types of tests are generally considered objective, quick to mark and able to cover a large area of content. They may be of a multiple-choice type or require dichotomous (true/false) responses. This type of test has been criticized, mainly, due to the difficulty encountered in correctly assessing higher-order thinking, such as the ability to analyze or synthesize information or solve problems. A minimum acceptable level may be set for these tests, but they cannot correctly distinguish between students who have achieved an acceptable level (passed) and those that have truly mastered the target content.
- Those with *an unstructured response*. The students must provide their own appropriate response to a statement or question. This can be further divided into:
    - Long response: an orderly exposition of the answer is required, providing information, opinions, or points of view. This type of test aims to elicit the construction of logical and structured discourse.
    - Short answer: the answer will be a word, a number, a short phrase or a definition. It is more difficult to assess complex learning with these questions.

Table 20 describes some of the different types of evaluation that we currently find.

TABLE 20. Types of assessment in physical education (López-Pastor, 2012).

Assessment type	Description
Shared assessment	The teachers and their students must negotiate the assessment of learning. These types of "dialogues" can be one-to-one or held with a group. They usually build on previous processes of peer or self-assessment.
Co-assessment or peer assessment	This can be on a one-to-one or collective basis. If collective, aspects of the group as a whole can be assessed, as well as what each participant has contributed to the group's work (intragroup assessment).
Self-assessment	Learners reflect on and grade their own learning achievement .
Dialogic rating	Process by which students and teachers discuss the final grade and agree on it, based on the previously established grading criteria.

Source: López-Pastor et al. (2012).

For formative and shared assessment, the following description of assessment instruments and techniques is proposed (López-Pastor et al., 2006) (Table 21):

TABLE 21. Different assessment instruments and techniques (López-Pastor et al., 2006).

Instrument	Description
Teacher's diary or notebook	Monitoring of the daily teaching-learning process. The possibilities range from highly structured notebooks (self-assessment sheets for sessions) to unstructured notebooks (anecdotes, reflections on practice, etc.).
Records of classes and teaching unit	Observation, analysis and reflection on what happened and decision-making during planning can generate cycles of reflection-action.
Student work, student folder and notebook	Submissions or specific work made by the students (individually or collectively): session sheets, assignments, projects, etc. Another option may be the student's notebook, understood as a learning instrument and a record of teacher-student dialogue, which also serves as a purpose within formative assessment.

Records for students to complete	- Individual monitoring sheets and group observation sheets, allowing information on student learning processes to be collected systematically and continuously. - Self-reports, self-assessment sheets and/or questionnaires, facilitating the participation of students in the assessment process to improve their learning, responsibility and autonomy.

Source: López-Pastor et al. (2006).

In this context, rubrics are important and they are increasingly present in the assessment processes, since they provide a means to more reliably gauge the quality of work, through the use of levels of achievement (from poor to excellent) (Andrade & Du, 2005).

2.6. DIDACTIC RESOURCES

Planning for competencies, learning outcomes, content and methodological strategies also has to take into account the teaching resources required for each session. These should not only be considered as a means for instruction, but as a way of developing the curriculum, and can also be associated with other transversal factors such as culture, cognition, communication (Coyle, 2007) and creativity (Valverde-Esteve, 2021). Therefore, the teaching-learning process itself must take primacy over the teaching resources and not the other way around. When planning the Didactics of Physical Education in Primary Teaching, we distinguish the following elements:

- *Human resources*. There are 11 groups for the Didactics of Physical Education for Primary Teaching course, part of in the *Grado de Maestro de Educación Primaria* (Bachelor's Degree in Primary Education) at the Education Faculty of the Universitat de València. This means that, overall, the professors who teach this course do so for 660 hours in total. In addition to these contact hours, time is also needed for tutorials, preparation, monitoring and assessment.
- *Material resources*. In relation to the physical teaching resources to be used in physical education, Molina et al., (2008) divided these into three large categories: between printed resources, material resources and ICT. Taking this classification as a starting point, Table 22 shows examples of resources used in the Didactics of Physical Education in Primary Teaching course.

TABLE 22. Physical resources used in the Didactics of Physical Education in Primary Teaching course

Resource Type	Who for/purpose	Example
printed materials or in digital format	The school	Curriculum
		Teaching guides
	The teaching staff	Teaching guide
		Research articles
		Textbooks and manuals
		Session records
	The students	Teaching guide
		Syllabus slides
		Research articles
		Textbooks and manuals
		Session records
Material resources	Physical activity	Sports or motor skill equipment
	Facilities and equipment	Classroom
		Gym/sports hall
ICT	Display equipment	Multimedia whiteboard
		Computer
	Communication	Educational blog
		Virtual classroom

Note. ICT: Information and Communication Technologies. Source: Modified from Molina et al. (2008).

Curricular materials are used to support the sign, implementation or assessment of a given curriculum, and the choice of materials may have a theoretical justification (Molina et al., 2008). In the field of physical education, a very wide range of curricular materials are available, such as sports equipment. Devís and Peiró (2004) list the following materials (Table 23):

TABLE 23. Curricular materials in physical education (Devís & Peiró, 2004).

Type of resources	For the school	Type
Printed materials	For the teaching staff of Physical Education	Content sequences Timetables Books Units and teaching guides Files Articles, etc.
	For the students	Textbooks Worksheets Articles and printed materials Diaries and class notebooks Movies and documentaries Dossiers, etc.
	For the family	Grades Information brochures, etc.
Material resources	Expendable material	Pencils and pens Notebooks
	Material for physical activity/sport	PE kit Mats and balls Tires Cones, etc.
	Facilities and equipment	Playground and gym Pool Playing field Basket and goals Climbing frames, etc.
Technological means	Visual	Projectors Blackboards
	Acoustic	Stereos Audio players Speakers
	Audiovisuals	TV and video players
	Interactive	Digital whiteboard Tablets Computers

Mobile phones

Source: Devís & Peiró (2004).

Due to the recent COVID-19 pandemic, information and communication technologies (ICT) require special mention. The Spanish government has launched the Digital Spain 2025 plan, to promote the deployment of a digital and ecological system that protects individual and collective rights. In this way, the ten key aims are:

- To reduce the digital divide between urban and rural areas.
- To increase the deployment of 5G technology.
- To strengthen the basic digital skills of workers.
- To strengthen cybersecurity.
- To digitalize the work of government agencies.
- To digitalize business activities, especially SMEs and start-ups.
- To improve of media production in Spain.
- To take advantage of the opportunities provided by artificial intelligence, while guaranteeing security and privacy.
- To guarantee citizens' rights in the digital environment.

For the development of digital skills, there is now a 'Common Framework of Digital Literacy for Educators' (*Marco de Referencia de la Competencia Digital Docente*), developed by Spain's educational training agency, the Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado. It is based on DigComp, the Digital Competence Framework. 2.0 for Citizens, part of the EU's European Skills Agenda, announced in 2020. In this way, a total of five areas are established around which six levels of competence are established, in a very similar way to the Common European Framework for Languages; that is, ability in the following is classed from A1 to C2:

- Information and Information Literacy
- Communication and collaboration
- Digital Content Creation

- Security
- Problem resolution

Its implementation in the educational field requires significant economic investment, in addition to suitable planning, as adaptation in the use of technological resources, teacher training, and the creation of optimal environments for the acquisition of the target competencies are required. In a very similar way to Bloom's taxonomy, Apple Classrooms of Tomorrow report (ACOT, 2008) states that technology-related learning in the 21st century has three levels:

- The processes through which people learn
- Technological innovations, allowing greater access to content and people
- Globalization, increasing interdependence between members

To this end, this report proposes six principles for the design of activities, which are:

- Understanding 21st century skills so that students feel a sense of achievement.
- A relevant and applied curriculum that offers an innovative vision of what a learning environment should be through project-based learning.
- Informative assessment, designed so that student learning is improved and information can be provided about the learning environment.
- A culture of innovation and creativity, supporting and reinforcing the learning environment and thus generating the continuous development of skills.
- Social and emotional connections with students, offering recognition of the personal, professional and family relationships that can determine a child's development, in their family, at school and in the community, finding at least one adult who is in tune with their own interests and social connections.
- Ubiquitous access to technology, since constant access to digital resources is required for life and work, which allows them to engage and empower themselves.

The process of development of the digital teaching competence consists of six phases in which the basic uses of technological resources are explored, teaching

methods are adopted and adapted to the technology, appropriate interdisciplinary teaching that includes technology is undertaken, and finally, resources are created.

In the field of Physical Education, it is necessary to respond to the demands of today's society and those in it must meet the challenge of acquiring digital skills, i.e., to be able to search, obtain, process and communicate information and transform it into knowledge (Díaz-Barahona, 2012) using digital resources. Following Díaz-Barahona (2012), it is not only about mastering technologies but also knowing how to use them effectively in different areas (Table 24).

TABLE 24. Areas and objectives that contribute to the development of digital skills (Díaz-Barahona, 2012).

Scope	Objective
Technological-instrumental	Technological literacy
Informational	Information literacy, the ability to manage information using ICT
Social and communicative	Social and communication skills
Cognitive learning	Cognitive skills: critical and autonomous thinking, innovation, knowledge creation
Ethical	Digital citizenship
Attitudinal	Attitudes, values and norms related to ICT

Source: Díaz-Barahona (2012).

In this context, sometimes, the use of ICT in physical education is hindered by the lack of teaching hours for the subject, and the quantity of content to be transmitted (Corrales, 2009). Some difficulties with the use of ICT in the educational field have been:

- Lack of resources, due to the equipment acquisition cost
- Limited teacher training due to the traditionalism in the educational field

- Lack of time on the part of teachers to produce their own teaching resources

Despite this, we must keep in mind the advantages of its use compared to traditional teaching (Prat et al., 2013):

- Flexible schedule
- Adaptability (student personalization)
- Interactivity (two-way communication)
- Interdisciplinary work
- Immediacy
- Multi-format

For all these reasons, Díaz-Barahona (2012) highlights the following:

- Physical education is enriched by the use of ICT
- Physical education and ICT are compatible. The use of ICT should not make physical activities more sedentary.
- The middle ground must be found between indiscriminate use and techno-skeptics.
- ICT must be integrated into Physical Education as another work instrument, without replacing pedagogical processes.
- It is necessary to rationalize their use, so that they form part of didactic processes.
- Virtual experiences must be enriched with real experiences.
- We must not forget that we learn by reflecting on our actions.
- The use of ICT must stimulate action.

As a consequence, the implementation of ICT in physical education is increasing, especially since the implementation of hybrid teaching, in response to the COVID-19 pandemic (Baena et al., 2020). New studies are emerging, trying to find the strategies that teachers use to implement ICT in physical education (Cabrera-Ramos, 2020; Díaz-Barahona, 2020; Salguero, 2009), as well as in the training of future teachers (Menescardi et al., 2021).

The Internet facilitates access to information at any time and from any location, allowing the dissemination of content and enabling access to any institution or person.

We can even speak now of 'hybrid learning environments' (Suárez-Guerrero & García, 2022) and we can use virtual platforms, such as Moodle, to house teaching resources for all subjects. The Aula Virtual ("virtual classroom") is a learning environment at the *Universitat de València* (http://aulavirtual.uv.es). In this environment, students can access the courses they are enrolled on and see course information, such as the course guide, who the professors are, the timetables and the syllabus.

In this course, all the notes are available to students in different formats: texts, presentations and videos. The Aula Virtual allows messages to be exchanged between students and teachers, synchronously and asynchronously, facilitating the sending of messages to the whole group and sub-groups. Examples of the multiple resources used in the Didactics of Physical Education in Primary Teaching course are: Kahoot (with links to interactive questionnaires), use of the "assignments" link to submit assignments for assessment, "Edumedia. Video assignment" (for the submission of video montages), "Edumedia. "Video resource" (where teachers share audiovisual resources), "Files" (where articles and documents referring to course content are located, "Videoconferences" (where teaching sessions are held in alternate weeks, depending on the health-related circumstances) and "Questionnaires". Since the 2020-2021 academic year, especially due to the hybrid nature of teaching, the "Blackboard Collaborative" tool has been used very frequently, allowing the monitoring of teaching sessions and online tutorials between students and teachers. This platform has now been replaced with 'Meet' and 'Zoom' for follow-up with students who have not been able to attend the sessions in person.

Links are placed in the Aula Virtual to blogs on education, such as "Edublog", designed for the purpose of exchanging information and debating issues related to the teaching, including the teaching of physical education in primary schools. As Molina et al. (2016) has stated, some of the strengths of Edublogs are that it enables cooperative work from a distance, synchronous and asynchronous communication, the sharing of content in a learning community, increased visibility and the supervision of cooperative work. Likewise, Edublogs allows for deeper reflection on the development of the topic, as one can follow the work of other teachers of the subject (Lizandra et al., 2020; Menescardi et al., 2020; Molina et al., 2016). This blog was created for specific years of

the course, creating a virtual space in which the students on the course could participate in a virtual environment and participate in formative and shared assessment (Lizandra et al., 2020).

Gamification[9] is another common approach. It involves applying systems that are usually related to games to other contexts that are not necessarily playful (Deterding et al., 2011; McGonigal, 2011; Werbach, 2012; Stott and Neustaedter, 2013; Parente, 2016; Alexander -Oliva, 2016; Ortiz-Colón, Jordán, & Agredal, 2018). It has been used in a wide variety of contexts. Scholars have used this methodological strategy in areas such as technology (Firwana, Abu, & Aqel, 2021), business (Rodríguez, Oliveira, & Rodrigues, 2019), and journalism (Dowling, 2020). In the context of physical education, it is also used in teacher training (Oliveira et al., 2023; Lee & Hammer, 2011; Stott & Neustaedter, 2013), in higher education (Tordera, 2021), in the promotion of healthy lifestyles (Fernández-Río et al., 2020; Lizandra, Valverde-Esteve & García-Masso, 2020), and in CLIL (Granero-Gallegos, Baños; & Baena-Extremera, 2021).

Following Kapp (2012), for a gamification process to be considered game-like, some of the following elements must be present: a challenge, rules, interactivity, feedback, a quantifiable response and a possible emotional reaction. Thus, the challenge constitutes one of the greatest sources of motivation, since the activities proposed should be stimulating. The inclusion of rules enables learning to be sequenced and for fair play to be distinguished from that which is not. Players should be able to interact and participate with each other, and gain feedback during the game. This feedback will allow them to correct their mistakes and improve, so it should be instant, direct and clear. Studies such as Huang, Hwang, Hew & Warning (2019) even suggest using peer feedback in virtual environments, so that students remain more active and have higher quality interactions, in a behavioral, cognitive and emotional sense.

Among the many advantages of gamification, the specialized literature highlights recognition of students' progress in learning, the integration of information technologies into the learning process, and facilitation of the understanding of more complex subjects (Oliva, 2016; Koivisto & Hamari, 2014). In addition, the recreational

[9] Part of this information has been obtained from Valverde-Esteve (in press). The possibilities of Gamification in Higher Education: analysis of its implementation from the perspective of Non-Linear Pedagogy. In: Peter Lang.

and academic experience fosters interactive social relationships and the feeling of enjoyment (Koivisto & Hamari, 2014; Huang et al., 2019). Thus, the participants are not only encouraged to assimilate information, but also to focus on the concepts which generate the greatest difficulty.

The literature also highlights the freedom of being able to start over again and again or at different levels (Kapp, 2016), and the possibility to obtain immediate feedback (Mazarakis, 2015), even from one's peers (Huang et al., 2019). The students progress is easy to monitor and measure, as they progress through the different levels. Valda and Arteaga-Rivero (2015) have shown that we can see the students' involvement and progress as they are awarded different badges and trophies for passing the different levels and these are added to their profile, and any comments they make can be recorded.

Studies such as that of Li & Hu (2022) have shown that, despite the novel nature of gamification, learning acquires a 'U' shape; That is, initially, an advance occurs due to novelty. However, the curve decreases during the process of overcoming obstacles, and increases again after the familiarization process. Baylor (1997) proposes a similar theory for the concept of intuition, understood as the psychological function that allows the exploration of different possibilities (Figure 3). As can be seen, the level of experience of the participants improves intuition and, therefore, the ability to make decisions (Akinci & Sadler-Smith, 2019).

2.7. ATTENTION TO STUDENTS WITH SPECIAL EDUCATIONAL NEEDS

Practice sessions in the gym are common during the course. Curricular adaptations are considered in thematic section 5c. In this section, an emphasis is placed on functional diversity, avoiding the term "disability", as it implies a denial of capacity of these people and a perception of inferiority (Asún, 2016; Fitzgerald, 2005). In this way, the term "functional diversity" respects the dignity of the person (Chiva-Bartoll et al., 2020), by considering the differences between all people as a characteristic of diversity.

There continue to be barriers hindering the inclusion of students in society, which may be physical, behavioral, political and/or institutional, thus generating exclusion and invisibilization (Coe, 2013; Gómez-Galindo et al., 2016):

- Institutional barriers: discriminatory legislation and systems (Coe, 2013).
- Physical or environmental barriers: architectural barriers and inaccessibility to information, such as lack of knowledge of sign language.
- Behavioral barriers: leading to the segregation and marginalization of these students, through negative ideas and stereotypes (Pomares-Puig, 2014).

Proposals to address this problem include the modification of school organization, educational policies to address special educational needs, development of skills for working with these students, and additional initial teacher training (Tenorio, 2011). In part, one of the obstacles to achieving truly inclusive schools is that teachers do not feel that they have the right skills in this matter (Díaz del Cueto, 2009) and do not know how to deal with diversity. They may even come to perceive it as a hindrance, instead of a teaching challenge (Martos-García, 2018). Hence, the training of future teachers is essential.

Traditionally, in the teaching of PE, the playing of sport with a focus on technique and performance has predominated, which is hardly compatible with inclusion. This has led some students to take on passive roles, observing the sessions from the sidelines, without participating (Martos-García, 2018). Hence, we must raise awareness among students and teachers about this problem, offering them ideas which can lead towards inclusive schools.

A clear example of this sensitization process is shown in Sparkes et al. (2019), when describing the simulation of the inclusion of a student with osteogenesis imperfecta in the PE class, based on a real experience. Through this experience, the students become aware of the possibilities and their impressions of a student with such a disease, thus encouraging reflection on some examples of game modifications in a PE class (Martos-García & Valencia-Perís, 2016).

Similar proposals have been made by the teaching staff of the course in teaching innovation projects in which students with functional diversity are included, addressing their possibilities and achievements, and comparing them with superheroes, as they are people who do not stop when faced with difficulties (Toledo & Sánchez, 2000).

In the pursuit of the comprehensive training of students as primary school teachers, these innovative proposals make it possible to deconstruct stereotypes and increase knowledge about functional diversity (Durán & Sanz, 2007), while reminding students that everyone has the right and desire to participate – it is essential to include everyone in the activities.

Currently, the term “integration” has been replaced by “inclusion”, in response to diversity (Ainscow, 2001). Inclusion applies to any stage of education, enabling all boys, girls, or young people to have access to equal opportunities (Echeíta & Duk Homad, 2008). Due to its importance in this program, we will focus attention on teacher training. However, it is important to keep legislation in mind (LOGSE, LOCE, LOE, LOMCE, LOMLOE), as the names of the different strategies have changed, in response to the demands of today's society.

Focusing on inclusion in physical education, Ríos (2009) highlights the barriers that students have encountered in terms of participation and learning:

- Structural conditions: scarcity of economic resources, accessibility and design for all.
- Social conditioning factors: lack of knowledge of the disabled population.
- Conditions of the students with special educational needs: self-marginalization, difficulties in relationships and low level of acceptance.

- Conditioning factors for teaching: the undervaluation of PE as a subject, teacher training, the teachers' own idiosyncrasies (previous experiences), the “family factor” (with fears of possible injuries), the attitude of the student’s classmates (for example, raising awareness may be necessary), the student’s diagnosis and medical and physiotherapy reports, as well as the absence of specialists in adapted physical activity in the pedagogical advisory teams.

Thus, the author points out that all students share the same space, without differences, so we must reflect on the organization and the pedagogical and social support systems and to set high standards. In this sense, recent studies have focused their attention on the service-learning methodology as a strategy for inclusion in physical education (Maravé-Vivas et al., 2021; 2020). This approach has been used with students in initial teacher training, used with students with autism spectrum disorder. During their teaching, the trainees acquire skills that lead to a better understanding of the reality of vulnerable students, adapting and creating tasks that combine motor, social and recreational components.

3. RESEARCH AND SOURCES OF INFORMATION IN PHYSICAL EDUCATION

The academic status of an area of study is based on the existing research literature and its degree of standardization as a discipline. Specifically, primary and secondary sources are used by university professors to update their knowledge of the subject and curricular guidelines. In this context, although the specific literature regarding physical education is not as developed as other areas of knowledge, in recent years there has experienced a notable increase in Spanish and international research databases (Valenciano, 2010).

The incorporation of physical education as an area of study for undergraduates, together with the harmonization of the Spanish degree programs with those across the EHEA, has standardized the process, with students required to undertake an end-of-degree project for their bachelor's or master's degrees. In the end-of-degree project, students must acquire theoretical knowledge and apply a series of methods to obtain results, contextualize their work in terms of the existing literature and draw relevant conclusions. The wide variety of research topics available has enriched the area.

However, the choice and exploration of certain topics has caused debate about studies being carried out with reference to specific paradigms, limiting the possibilities regarding the studies that can be undertaken in the area of physical education and any possible synergies with related areas of study.

According to Rodríguez's (2011) proposal, physical education, whose purpose is the study of human movement as an educational phenomenon, would address two study trends:

a) One linked to the mechanistic and biological conception of the body, related to the sciences of physical activity that study human movement.
b) The second, linked to the social sciences, addressing the study of human movement as an educational phenomenon.

Whatever the perspective from which teaching is approached, responsibility must be based on fundamental pillars, to establish a connection between physical education professionals and university academics (Estevan, 2019):

- Updating teacher's knowledge
- A research base solid enough to document the consequences of teaching activities in PE as a school subject
- The transfer of research conclusions into the professional arena.
- Evidence-based approaches can only be created by carrying out research that may start from different perspectives. In the field of physical education, quantitative, qualitative research is carried out, as well as a mix of both approaches to research, and they can all generation of useful knowledge (Armour & Macdonald, 2012):
  - *Quantitative research*: this approach is based on the branch of philosophy known as "logical positivism", which is characteristic of the natural sciences. In this type of research, the research team aims to act as an objective observer, without influencing the observations of reality. It tests hypotheses and makes deductions from the results and can thus be used to test theories. Examples of quantitative research are descriptive, correlational and intervention studies (experimental and quasi-experimental).
  - *Qualitative research*: this has its origin in the social sciences, being used to understand human situations and experiences. This type of research is inductive and subjective. Its philosophical approach is interpretive, humanistic and naturalistic, based on phenomenology. Examples of quantitative research are ethnographic or historical studies. Common data collection techniques are group interviews (discussion groups and focus groups) and case studies.

In relation to the quantitative and qualitative research traditions in physical education, different paradigms and conceptual frameworks can be found (Sparkes, 1992):

- *Positivist or quantitative paradigm:* this includes descriptive, correlational and intervention studies. The factors analyzed are called "variables" and a representative sample is sought so that the results can be generalized.
- *Interpretive or qualitative paradigm:* this focuses on an analysis of the meaning of people's actions. This paradigm differs from the positivist paradigm in that it does not attempt to generalize, but rather focuses on what is particular and unique to the person.

- *Critical paradigm:* this paradigm is based on the transformation of social relations or educational contexts, in order to offer solutions to problems of injustice and social oppression. Through this process, an attempt is made to generate knowledge that encourages critical reflection and the emancipation of the person. Research framed in this paradigm is based on the idea that social phenomena are conditioned by ideologies and forms of power imposed by social groups.

In addition to these research paradigms, the literature also includes systematic reviews and meta-analyses, which examine studies carried out over a certain period of time (chosen by the research team). This type of study has recently been commonly chosen by the undergraduate and master's students, due to the impossibility of carrying out in-person studies during the COVID-19 pandemic. Regarding this type of study, students should focus on teaching and research work in Physical Education, regardless of the paradigm or approach taken.

The stages of the research process are detailed in the next section, which undergraduate and master's students go through when undertaking their end-of-degree project.

3.1. STAGES OF THE RESEARCH PROCESS

The research process is composed of a series of stages, from the formulation of the research problem up to the dissemination of the results occurs (Carrasco & Calderero, 2000):

- *Research planning phase.* a) The problem or research question is posed, b) the literature related to the problem is reviewed, c) hypotheses are formulated d) variables are identified, e) a research design is selected, including aspects of the method such as the sample or information collection techniques.
- *Research completion phase.* The data are collected, analyzed and interpreted.
- *Interpretation and communication of the conclusions.* Further interpretations are made and conclusions drawn up. A research report is created to disseminate the conclusions of the study and its possible implications for educational practice.

Once these three phases of the research process have been completed, the conclusions can be disseminated to the scientific community through different means. Currently, the most important communication channel is publication in an academic journal, enabling the results to be discussed in relation to previous studies. For this to be possible, would-be researchers need to know the sources of information available to them. Below are some of the most important sources for physical education.

3.2. SOURCES OF INFORMATION IN PHYSICAL EDUCATION

Documentary sources provide information on a subject. Bibliometrics is the science that analyzes specialized research literature and the impact that researchers have, using statistical methods to examine different areas of knowledge and institutions (Lopez-López, 1996). Two types of information sources can be distinguished, based on their fundamental characteristics:

3.2.1. PRIMARY SOURCES OF INFORMATION:

Primary research publications contain new and original information and are the result of intellectual work (Estevan, 2019). These are complete, publicly available publications. Examples include:

- Books: long documents with a variable number of pages. They examine a discipline from different perspectives.
- Textbooks: providing a global vision of the discipline, containing classic content.
- Treatises: in which a discipline is set out in detail.
- Monographs: provided a very detailed view of a specific topic.
- Academic journals: these are periodical publications that include original studies, reviews of other research, innovative experiences, letters to the editor, or expanded versions of presentations given at conferences. The advantage that academic journals offer is that their publications are periodical, enabling the continuous updating of information.
- Doctoral theses: they are publications of great value, due to the depth and extent with which the analyzed topics are discussed. Increasingly, these publications may lead on to the publication of further research articles.
- Conferences and seminars: the studies presented at these events are usually published in books known as proceedings or monograph editions of specialized journals may be published.
- Other documents: audiovisual media, which are increasingly becoming more important due to the ease with which they can be distributed.

3.2.2. SECONDARY SOURCES OF INFORMATION:

These are those that facilitate the search for and access to primary sources by reorganizing them. Examples of such sources are (Valencia, 2018):

- Directories: these enable people, organizations, documents, etc., to be located at a specific time (e.g., this directory of Spanish publishers: http://www.mcu.es/webISBN/editorialAvanzadaFilter.do?cache=init&layout=busquedaeditoriales&language=e).
- Library catalogues: these are continuously updated to reflect changes to the library holdings (e.g., https://www.uv.es/uvweb/servei-biblioteques-documentacio/ca/servei-biblioteques-documentacio-1285867215074).
- Thesauruses: these are instruments that convert basic terminology and convert it into a more technical language than that used in the original documents (e.g., https://Eric.ed.gov/).

- Summaries and indexes: these are publications with brief reviews of research (e.g., Index to Scientific Reviews. Thompson Reuters).
- Databases: collections of up-to-date information on research (e.g., Dialnet).

3.2.3. TERTIARY SOURCES OF INFORMATION:

They are reference works that facilitate access to information (e.g., encyclopedias or dictionaries).

3.3. ACADEMIC JOURNALS IN PHYSICAL EDUCATION

Recent publications linked to the area of physical education have achieved significant national and international recognition and impact. Although it is true that there is no specific discipline of physical education, due to its close relationship to other areas of knowledge, we can find publications in the area in categories and journals listed in *Journal Citation Reports* (JCR) such as "Education", "Sport Sciences", "Orthopedics and Sports Medicine", "Physical Therapy, Sports Therapy and Rehabilitation", and among the various categories included in the areas of "Social Sciences", "Medicine" or "Health Professions", of the Scimago Journal & Country Rank (SJR).

The Web of Science (WOS) database provides a world ranking for journals. The "impact factor" and the "quartile" are the key indicators for research quality for accreditation agencies and promotion requirements in higher education. The value of an article is determined by the number of citations it has received in a specific year, in comparison with the articles published in the previous two years, although in recent years, this has expanded to include the articles published in the previous five years. The *Scimago Journal Rank* (SJR), developed by Scopus, is similar although less prestigious.

JCR provides two classifications: one for the sciences, the *Science Citation Index Expanded* (SCIE), and one for the social sciences, the *Social Sciences Citation Index* (SSCI). As noted above, physical education does not have its own category, but we can find a multitude of studies in specialized journals regarding issues across the discipline.

As we have seen, depending on the research paradigm, studies in the field may lean towards the journals classified in SCIE or SSCI: a search reveals a total of 767

journals in the *Education & Educational Research* category and 139 in the *Sport Sciences* category.

Table 25 shows some of the main journals indexed in these categories. They are ordered according to the impact factor and all of them correspond to the first quartile.

TABLE 25. The main journals indexed in the *Education & Educational Research* and *Sport Sciences* categories in the JCR.

Education & Educational Research		***Sports Sciences***	
Journal	**Impact factor for 2023 (JCR)**	**Journal**	**Impact factor for 2023 (JCR)**
Review of Educational Research	13.805	British Journal of Sports Medicine	14.479
Computers & Education	11.182	Journal of Sport and Health Science	13.077
Educational Research Review	10.207	Sport Medicine	11.928
Internet and Higher Education	8.591	Qualitative Research in Sport Exercise and Health	7.591
International Journal of Educational Technology in Higher Education	7.611	American Journal of Sports Medicine	7.010
Learning Media and Technology	7.586	Sports Medicine-Open	6.766
Review of Research in Education	7.300	Exercise and Sports Sciences Reviews	6.642
Learning and Instruction	6.636	Journal of Orthopaedic & Sports Physical Therapy	6.276
Educational Researcher	6.386	Psychology of Sport and Exercise	5.118
Communicate	5.725	Scandinavian Journal of Sports medicine & Science in Sports	4.645

Based on information from Web of Knowledge (accessed on 02/13/2023).

Table 26 shows a selection of the main journals belonging to the *Education & Educational Research* category, which mention “physical education”.

Table 26. The main journals in the area of physical education included in WOS.

Journal	Impact factor for 2021 (JCR)	Category	Quartile
Physical Education and Sport Pedagogy	4,638	Education & Educational Research	Q1
Health Education & Behavior	4.444	Public, Environmental & Occupational Health	Q1
European Physical Education Review	3.675	Education & Educational Research	Q1
European Physical Education Review	3.675	Education & Educational Research	Q1
Journal of Human Kinetics	2.923	Sports Sciences	Q2
quest	2.891	Education & Educational Research	Q2
Adapted Physical Activity Quarterly	2.741	Sports Sciences	Q2
Journal of Teaching in Physical Education	2.660	Education & Educational Research	Q2
Measurement in Physical Education and Exercise Science	1.975	Education & Educational Research	Q3
International Journal of Sport Psychology	0.594	Psychology, Sports Sciences	Q4
Movement	0.523	Education & Educational Research	Q4
Physical Educator	0.35	Education & Educational Research	Q3
Journal of Physical Education	0.086	Sports Sciences	Q4

Based on information from Web of Knowledge (accessed on 02/08/2023).

At the national level, Table 27 shows the growing variety of academic journals that have emerged in recent decades. The first Spanish journal specializing in education was the *Revista Española de Educación* (in the 1970s). In the 1980s new specialized journals appeared due to the organization of specialized conferences (Peiró-Velert & Molina-Alventosa, 2020).

Table 27. The main Spanish journals indexed in JCR.

Journal	Impact factor for 2021 (JCR)	Category	Quartile
International Journal of Educational Technology in Higher Education	5.121	Education & educational research	Q1
Communicar	5.725	Education & educational research	Q1
Psychothema	4.988	Education & educational research	Q1
Revista de Psicodidáctica	3,.75	Psychology, educational	Q1
Revista de Educación	1.783	Education & educational research	Q1
Educación XXI	3.077	Education & educational research	Q1
International Journal of Medicine and Sciences of Physical Activity and Sports	1.281	Sports sciences	Q1
Revista Española de Psicología	1.264	Psychology Psychology, multidisciplinary	Q3
Revista de Psicología del Deporte	1.172	Psychology, applied	Q4
Psicología Conductual	1.091	Psychology, clinical	Q4
Infancia y Aprendizaje	0.854	Psychology, educational Psychology, developmental	Q4

Based on information from Web of Knowledge (accessed on 02/13/2023).

However, in SJR, we can find other Spanish journals which have a lower impact but which are also of value for accreditation systems, appointments and research reports, at Spanish universities (Table 28).

Table 28. The main Spanish journals indexed in SJR in the Education category.

Journal	Impact factor for 2020 (SJR)	Quartile
Comunicar	1.217	Q1
Revista de Psicodidáctica	0.881	Q1
Journal of New Approaches in Educational Research	0.822	Q1
Revista de Investigación Educativa	0.787	Q1
Educación XXI	0.751	Q1
Revista de Educación	0.643	Q2
Porta Linguarum	0.554	Q2
Pixel-Bit	0.504	Q2
REICE. Revista Iberoamericana sobre Calidad, Eficacia y Cambio en la Educación	0.501	Q2
Revista Española de Orientación y Psicopedagogía	0.499	Q2

Based on information from SJR (accessed on 02/08/2023).

The SJR website is freely accessible, whereas access for Spanish universities and research organization to the WOS website is paid for by FECYT (the Spanish Foundation for Science and Technology), which is part of Spain's Ministry of Science, Innovation and Universities.

Another ranking, DICE (Dissemination and Editorial Quality), created by ANEP and FECYT, assesses the quality of Spanish academic journals, according to the following classification (from highest to lowest quality): A+, A, B and C. Table 29 shows the journals in the category "Physical and Sports Activity":

Table 29. The DICE ranking of Spanish journals for "Physical and Sports Activity".

Nombre de la revista	Clasificación DICE
Revista Iberoamericana de Psicología del Ejercicio y del Deporte	A
Apunts. Educación Física y Deportes	A
Cultura, Ciencia y Deporte	A
Ágora para la Educación Física y el Deporte	A
Journal of Sport and Health Research	A
Revista Internacional de Ciencias del Deporte. RICYDE	A+
Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte	A+
Motricidad. European Journal of Human Movement	C
Citius, Altius, Fortius	C
Revista Española de Educación Física y Deportes	C
Tándem. Didáctica de la Educación Física	C
RED. Revista de Entrenamiento Deportivo	C

Source: DICE (http://epuc.cchs.csic.es/dice/busqueda.php), accessed on 02/08/2023.

3.4. DATABASES IN PHYSICAL EDUCATION

A variety of databases provide a record of the latest publications in different areas of knowledge. Due to their accessibility via the internet both inside and outside the university environment, they are very widely used. Table 30 shows the databases in which we can find information on physical education.

Table 30. Research databases in alphabetical order.

Name	URL	Description
CLASE (Latin American Citations in Social Sciences and Humanities)	http://clase.unam.mx/F?func=find-b-0&local_base=cla01	Created in 1975 at the Universidad Nacional Autónoma de México (UNAM), it collates research published in Latin America and the Caribbean, specializing in the social sciences and humanities.
Dialnet	https://dialnet.unirioja.es	Created in 2000, at the Universidad de La Rioja, although today it is now part of the Fundación Dialnet, it incorporates research literature published in Spain and Latin America.
ERIC (Education Resources Information Center)	https://eric.ed.gov	Sponsored by the Institute of Education Sciences (IES) of the US Ministry of Education, it is a research database focusing on education.
latindex	http://latindex.org	This database concerns research journals published in Latin America, the Caribbean, Spain and Portugal.
MEDLINE	http://www.ncbi.nlm.nih.gov/pubmed	Run by the National Library of Medicine of the United States, it collates research articles from the medical and biomedical area from around the world. Via Pubmed, it is free to access.
PsycINFO (Psychological Abstracts)	http://www.apa.org/psycinout/covlist.html	Run by the American Psychological Association (APA), it focuses on research on the behavioral sciences and mental health. Access to the database is restricted, although it can be accessed via the Universitat de València's subscription.

Name	URL	Description
REDINED (Red de información educativa)	http://redined.mecd.gob.es/xmlui	Created in 1985 by the Universitat de Barcelona, the Universidad de Alcalá No and ICE of the Universidad del País Vasco, it contains educational resources, research documents, innovations, and journals.
Scopus	www.scopus.com	Created in 2004 by Elsevier, it includes journals in the areas of science, technology, medicine and social sciences. This database allows you to create a profile to view the number of publications and citations you receive. Although access is restricted, it can be accessed via the Universitat de València's subscription.
SPOLIT (Sports Literature Database)	www.bisp-datenbanken.de	This is sports research database in German. It contains research publications documents from various areas, such as physical education, didactics, sociology of sport and sports psychology.
SPORTDiscus	https://www.ebsco.com/es/products/databases/sportdiscus-1	Created by SIRC Sport Research in Ottawa, it contains research publications in 58 different languages, including studies in all areas related to physical Education and sports. In addition, it also includes other databases such as ATLANTES and HERACLES. Although access is restricted, it is possible to access it via the Universitat de València's subscription.
TDX	http://www.tesisenxarxa.net/	This is a repository contains the doctoral theses submitted in Catalonia, and from other areas.
THESEUS	https://www.educacion.gob.es/teseo/irGestionarConsulta.do	This contains doctoral theses submitted in Spain.
Web of Science	https://www.recursoscientificos.fecyt.es/	Developed by Thomson Reuters, this database includes those journals indexed in the *Social Sciences Edition* and *Sciences* categories.

Source: own elaboration

In addition, the Universitat de València has its own digital institutional repository, called *Roderic* (http://roderic.uv.es), which is free to access, containing

digitized contributions from its university community regarding teaching, research and culture in general. The University's professors also deposit their teaching materials in the repository.

BIBLIOGRAPHICAL REFERENCES

Abdelbadie, R. A. (2023). Cooperative Learning and Accounting Students Transitions into Higher Education: Lessons from Learning Experiences During the COVID-19 Pandemic. In *Using Self-Efficacy for Improving Retention and Success of Diverse Student Populations* (pp. 167-202). IGI Global.

Aja, T. G. (2006). Thomas Arnold. (13 de junio de 1795–12 de junio de 1842). *RICYDE. Revista Internacional de Ciencias del Deporte, 2*(3).

Akhmadullina, R. M., Abdrafikova, A. R., & Vanyukhina, N. V. (2016). The Use of Music as a Way of Formation of Communicative Skills of Students in Teaching English Language. *International Journal of Environmental and Science Education*, *11*(6), 1295-1302.

Allal, L. (1980). Estrategias de evaluación formativa: concepciones psicopedagógicas y modalidades de aplicación. *Infancia y aprendizaje*, *3*(11), 4-22.

Alles, M. A. (2002). *Desempeño por competencias: evaluación de 360o*. Ediciones Buenos Aires: Granica SA.

Álvarez, I. (2008). Evaluación del aprendizaje: una mirada retrospectiva y prospectiva desde la divulgación científica. *Revista electrónica de Investigación Psicoeducativa, 14*(1), 235-272.

Álvarez-Méndez, J. M. (2001). *Evaluar para conocer, examinar para excluir*. Madrid: Morata.

Álvarez-Rojo, V; Romero, S.; Gil-Flores, J.; Rodríguez-Santero, J.; Clares, J.; Asensio, I. tal. (2011). Necesidades de formación del profesorado universitario para la adaptación de su docencia al espacio europeo de educación superior (EEES). *RELIEVE, Revista Electrónica de Investigación y Evaluación Educativa*, 17(1), 1-22. http://www.uv.es/RELIEVE/v17n1/RELIEVEv17n1_1.htm.

Amponsah, S., Kwesi, A. B., & Ernest, A. (2019). Lin's creative pedagogy framework as a strategy for fostering creative learning in Ghanaian schools. *Thinking Skills and Creativity*, *31*, 11-18.

Amponsah, S., Kwesi, A. B., & Ernest, A. (2019). Lin's creative pedagogy framework as a strategy for fostering creative learning in Ghanaian schools. *Thinking Skills and Creativity*, *31*, 11-18.

An, J., & Decker, J.T. (2019). Utilizing a critical service-learning approach in an adapted physical education course. *Journal of Physical Education, Recreation & Dance, 90* (4), 7-14.

Anderson, R. (2007). Thematic content analysis (TCA). *Descriptive presentation of qualitative data*, 1-4.

Andrade, H. L., & Du, Y. (2005). Student perspectives on rubric-referenced assessment. *Practical Assessment, Research & Evaluation, 10*(3), 1-11.

Aranda, A. F. (2013). Un cambio democrático en las aulas universitarias: Una experiencia en la formación del profesorado de Educación Física. *Contextos Educativos. Revista de Educación*, *6*, 213-234.

Arnold, P. J. (1979). Meaning in movement, sport, and physical education. *Heineman.*

Arnold, P.J. (1991). *Educación física, movimiento y curriculum.* Morata.

Arnold-Garza, S. (2014). The flipped classroom teaching model and its use for information literacy instruction. *Communications in information literacy*, *8* (1), 9.

Aronson, E. (1978). *The jigsaw classroom*. Sage.

Arráez, J.M. (1995). *Aspectos básicos de la Educación Física en primaria. Manual para el maestro.* Wanceulen.

Atencio, M., Yi, CJ, Clara, TWK, & Miriam, LCY (2014). Using a complex and nonlinear pedagogical approach to design practical primary physical education lessons. *European Physical Education Review*, *20* (2), 244-263.

Baena Morales, S., López-Morales, J., & García-Taibo, O. (2020). La intervención docente en educación física durante el periodo de cuarentena por COVID-19. Retos, 39, 388-395.

Balagué, N., Torrents, C., Hristovski, R., Davids, K., & Araújo, D. (2013). Overview of complex systems in sport. *Journal of Systems Science and Complexity*, *26* (1), 4-13.

Balius Juli, R. (1975). Hitos de la historia de la Educación Física española. *Apunts Medicina de l'Esport (Castellano)*, *12*(048), 215-219.

Balter, L., & Tamis-LeMonda, C. S. (Eds.). (2006). Child Psychology: A handbook of contemporary issues. Taylor & Francis.

Banegas, D. L., & del Pozo Beamud, M. (2022). Content and language integrated learning: A duoethnographic study about CLIL pre-service teacher education in Argentina and Spain. *RELC Journal, 53*(1), 151-164. https://doi.org/10.1177/0033688220930442

Barahona, J. D. (2012). La enseñanza de la Educación Física implementada con TIC. *Educación física y deporte*, *31*(2), 1056-1056.

Barnett, L. M., Lai, S. K., Veldman, S. L., Hardy, L. L., Cliff, D. P., Morgan, P. J., ... & Okely, A. D. (2016). Correlates of gross motor competence in children and adolescents: a systematic review and meta-analysis. *Sports medicine*, *46*(11), 1663-1688.

Bartlett, F.C. (1958). *Thinking: An experimental and social study*. London: Allen & Unwin.

Barton, A. C. (2000). Crafting multicultural science education with preservice teachers through service-learning. *Journal of Curriculum Studies*, *32*(6), 797-820.

Beames, S., & Ross, H. (2010). Journeys outside the classroom. *Journal of Adventure Education & Outdoor Learning*, *10* (2), 95-109.

Bell, S., & Morse, S. (2013). *Measuring sustainability: Learning from doing*. Routledge.

Bezanilla, M. J., Fernández-Nogueira, D., Poblete, M., & Galindo-Domínguez, H. (2019). Methodologies for teaching-learning critical thinking in higher education: The teacher's view. *Thinking skills and creativity*, *33*, 100584.

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability (formerly: Journal of Personnel Evaluation in Education)*, *21*(1), 5-31.

Blázquez Sánchez, D. (1990). *Evaluar en educación física*. Barcelona: Inde.

Blázquez, D. (2017). *Métodos de enseñanza en educación física. Enfoques innovadores para la enseñanza de competencias*. Inde.

Bloom, B.S. (1984). Taxonomy of educational objectives: the classification of educational goals. Longman

Boix Mansilla, V. & Duraising, E. D. (2007). Targeted assessment of students' interdisciplinary work: An empirically grounded framework proposed. *The Journal of Higher Education*, *78*(2), 215-237.

Bolen, L. M., & Torrance, E. P. (1978). The influence on creative thinking of locus of control, cooperation, and sex. *Journal of Clinical Psychology*, *34*(4), 903-907.

Borg, S. (2019). Language teacher cognition: Perspectives and debates. *Second handbook of English language teaching*, 1149-1170.

Boto, R., Mayor, E., & Salguero del Valle, A. (2004). Las escuelas gimnásticas y su relación con la actividad física y educación física actuales. *Revista Digital EF Deportes*, *10*, 73.

Brew, C., Riley, P., & Walta, C. (2009). Education students and their teachers: comparing views on participative assessment practices. *Assessment & Evaluation in Higher Education*, *34*(6), 641-657.

Bronfenbrenner, U. (1994). Ecological models of human development. *Readings on the development of children, 2* (1), 37-43.

Brosig, M. (2019). Restricted Complexity a Middle Path Between Post-modern Complexity Theory and Positivist Mainstream IR. In *Forum: Complex systems and international governance', International Studies Review, https://doi. org/10.1093/isr/viz005.*

Brown, D. (2005). An economy of gendered practices? Learning to teach physical education from the perspective of Pierre Bourdieu's embodied sociology. *Sport, Education and Society*, *10* (1), 3-23. https://doi.org/10.1080/135733205298785

Cabero, I. & Pallarès, M. (2019). Digital Civilization and Emerging Pedagogies based on New Technologies. pp. 1 - 153. Egregius Editions.

Cabrera-Ramos, J. F. (2020). Producción científica sobre integración de TIC a la Educación Física: estudio bibliométrico en el periodo 1995-2017. *Retos: nuevas tendencias en educación física, deporte y recreación*, (37), 748-754.

Calvo-Bernardino, A. & Mingorance-Arnáiz, A.C. (2009). La estrategia de las universidades frente al Espacio Europeo de Educación Superior. *Revista Complutense de Educación, 20*(2), 319-342.

Camps Povill, A. (1989). La Educación Física. Ese camino tortuoso que por fin ve su final. *Apunts. Educación física y deportes*, *2*(16-17), 138-145.

Cano García, M. E. (2008). La evaluación por competencias en la educación superior. *Profesorado. Revista de curriculum y formación de profesorado*, *12*(3), 1-16.

Capella-Peris, C., Chiva-Bartoll, O., Salvador-Garcia, C., & Maravé-Vivas, M. (2022). Let Us Debate! A Proposal to Promote Social Entrepreneurship in Physical Education Teacher Education. *Journal of Teaching in Physical Education*, *1*(aop), 1-10.

Capella-Peris, C., Gil-Gómez, J., & Chiva-Bartoll, Ó. (2018). A rubric to assess the teaching competence using motor skills and body language games: Initial development and validation. *Journal of Physical Education and Sport,* 18 (2), 944-954.

Capella-Peris, C., Gil-Gómez, J., Chiva-Bartoll, Ó., & Martí-Puig, M. (2015). Design and validation of a rubric to measure teaching competence in the teaching of motor games and body expression in Early Childhood Education. *Agora for physical education and sport, 2015, vol. 17, no. 2 P. 148-167* .

Capella-Peris, C., Gil-Gómez, J., Martí-Puig, M., & Chiva-Bartoll, Ò. (2015). Multiple case study with life stories in the early childhood education degree: Service-Learning in the teaching of physical education. *Faculty. Journal of Curriculum and Teacher Education*, *19* (1), 334-348.

Capella-Peris, C., Salvador García, C., Chiva Bartoll, Ò., & Ruiz-Montero, P. J. (2020). Alcance del aprendizaje-servicio en la formación inicial docente de educación física: una aproximación metodológica mixta. *RETOS, 37,* 465-472.

Carrasco, J.B. (2000). *Técnicas y recursos para el desarrollo de las clases*. Rialp

Carrington, S. (2011). Service-learning within higher education: Rhizomatic interconnections between university and the real world. *Australian Journal of Teacher Education (Online)*, *36*(6), 1-14.

Carrington, S., & Saggers, B. (2008). Service-learning informing the development of an inclusive ethical framework for beginning teachers. *Teaching and Teacher Education, 24*(3), 795-806.

Carse, N. (2015). Primary teachers as physical education curriculum change agents. *European Physical Education Review*, *21* (3), 309-324.

Carse, N., Jess, M., & Keay, J. (2018). Primary physical education: Shifting perspectives to move forwards. *European Physical Education Review*, *24* (4), 487-502.

Casey, A. (2016). Models-Based Practice. En C.D. Ennis (Ed.). *Handbook of Physical Education Pedagogy*. Routledge.

Casner-Lotto, J., & Barrington, L. (2006). *Are they really ready to work? Employers' perspectives on the basic knowledge and applied skills of new entrants to the 21st century US workforce*. Partnership for 21st Century Skills.

Cattuzzo, M. T., dos Santos Henrique, R., Ré, A. H. N., de Oliveira, I. S., Melo, B. M., de Sousa Moura, M., ... & Stodden, D. (2016). Motor competence and health related physical fitness in youth: A systematic review. *Journal of science and medicine in sport*, *19*(2), 123-129.

Cebrián Carrión, S., van Eldik, T., Boonekamp, G. M., & Lizandra Mora, J. (2020). EVA Project: una intervención educativa y colaborativa para la promoción de estilos de vida activos. In *Teoría y práctica en investigación educativa: una perspectiva internacional* (pp. 2172-2185). Dykinson.

Cecchini, J.A. (1996a). Concepto de Educación Física. In V. García (Ed.), *Personalización en la Educación Física* (pp. 19-66). Rialp

Chambers, D. J., & Lavery, S. (2012). Service-learning: a valuable component of pre-service teacher education. *Australian Journal of Teacher Education*, *37*(4), 128-137.

Chiva, Ó., Gómez, J. G., Martínez, R. C., & Peris, C. C. (2016). El aprendizaje servicio como propuesta metodológica para una pedagogía crítica. *RIDAS. Revista Iberoamericana de Aprendizaje-Servicio*, (2), 70-94.

Chiva-Bartoll, O, Pallarés-Piquer. M., & Gil-Gómez, J. (2018). Aprendizaje-servicio y mejora de la Personalidad Eficaz en futuros docentes de Educación Física. *Revista Complutense de Educación, 29* (1), 181-197. http://dx.doi.org/10.5209/RCED.52164

Chiva-Bartoll, O. (2018). Evaluación de proyectos de aprendizaje-servicio. Porque lo que no se evalúa... se devalúa. *Eufonía, 77,* 30-36.

Chiva-Bartoll, O., Baena-Extremera, A., Hortiguela-Alcalá, D., & Ruiz-Montero, P. J. (2020a). Contributions of service-learning on PETE Students' effective personality: A mixed methods research. *International Journal of Environmental Research and Public Health, 17*(23), 8756.

Chiva-Bartoll, O., Capella-Peris, & Salvador-García, C. (2020b). Service-learning in physical education teacher education: towards a critical and inclusive perspective. *Journal of Education for Teaching*, *46*(3), 395-407.

Chiva-Bartoll, Ó., Gil-Gómez, J., & Zorrilla-Silvestre, L. (2019). Improving the effective personality of pre-service teachers through service-learning: a physical education approach. *Revista de Investigación Educativa, 37*(2), 327-343. https://doi.org/10.6018/rie.37.2.303331

Chiva-Bartoll, O., Maravé-Vivas, M., Salvador-García, C., & Valverde-Esteve, T. (2021). Impact of a Physical Education Service-Learning programme on ASD children: A mixed-methods approach. *Children and Youth Services Review*, *126*, 106008.

Chiva-Bartoll, O., Pallarés-Piquer, M. & Gil-Gómez, J. (2018). Service-learning and improvement of Effective Personality in future Physical Education teachers. Complutense Journal of Education, 29(1), 181-197. https://doi.org/10.5209/RCED.52164

Chiva-Bartoll, O., Ruiz-Montero, P. J., Martín-Moya, R., Pérez López, I., Giles Girela, J., García-Suárez, J., & Rivera García, E. (2019). University service-learning in physical education and sport sciences: A systematic review. *Revista Complutense de Educación, 30*(4), 1147-1164.

Chiva-Bartoll, O., Ruiz-Montero, PJ, Olivencia, JJL, & Grönlund, H. (2021). The effects of service-learning on physical education teacher education: A case study on the border between Africa and Europe. *European Physical Education Review*, 1-18. https://doi.org/10.1177/1356336X211007156

Chiva-Bartoll, O., Salvador-García, C., CapellaPeris, C., & Maravé-Vivas, M. (2019). Service-learning in initial teacher training: development of inclusion in the area of didactics of body expression. *Staff. Journal of Pedagogy, 71* (3), 63-77.

Chow, J. Y., Davids, K., Button, C., Shuttleworth, R., Renshaw, I., & Araújo, D. (2007). The role of nonlinear pedagogy in physical education. *Review of Educational Research*, *77*(3), 251-278.

Chow, J.Y., Davids, K., Button, C., & Renshaw, I. (2015). *Nonlinear pedagogy in skill acquisition: An introduction*. Routledge.

Chow, J.Y., Komar, J., Davids, K., & Tan, C.W.K. (2021). Nonlinear Pedagogy and its implications for practice in the Singapore PE context. *Physical Education and Sport Pedagogy*, 1-12.

Chow, JY, & Atencio, M. (2014). Complex and nonlinear pedagogy and the implications for physical education. *Sport, Education and Society*, *19* (8), 1034-1054.

Chow, JY, Davids, K., Button, C., Shuttleworth, R., Renshaw, I., & Araújo, D. (2007). The role of nonlinear pedagogy in physical education. *Review of Educational Research, 77* (3), 251-278.

Chow, JY, Davids, K., Hristovski, R., Araújo, D., & Passos, P. (2011). Nonlinear pedagogy: Learning design for self-organizing neurobiological systems. *New Ideas in Psychology, 29* (2), 189-200.

Clark, M. M., Warren, B. A., Hagen, P. T., Johnson, B. D., Jenkins, S. M., Werneburg, B. L., & Olsen, K. D. (2011). Stress level, health behaviors, and quality of life in employees joining a wellness center. *American Journal of Health Promotion*, *26*(1), 21-25.

Cliff, K., Wright, J., & Clarke, D. (2009). What does a 'sociocultural perspective' mean in health and physical education? In M. Dinan-Thomson (Eds.), *Health and physical education* (pp. 165–182). Oxford University Press.

Colás, P. & Villaciervos, P. (2007). The internalization of gender stereotypes in young people and adolescents. Journal of Educational Research, 25, 1, 35-58.

Colorado Lopera, H. A., Gutiérrez-Velásquez, E., & Ballesteros, N. (2022). Bridging the gap between theory and active learning: a case study of project-based learning in introduction to materials science and engineering. *IEEE Revista Iberoamericana de Tecnologias del Aprendizaje*, *17*(2), 160-169.

Conner, J. O. (2010). Learning to unlearn: How a service-learning project can help teacher candidates to reframe urban students. *Teaching and Teacher Education*, *26*(5), 1170-1177.

Contero, C., Zayas, F., & Tirado, J. L. (2018). Addressing CLIL lecturers' needs: reflections on specific methodological training. *Porta Linguarum: Revista internacional de didáctica de las lenguas extranjeras*, (3), 121-135. https://doi.org/10.30827/Digibug.54305

Contreras, O. (2000). El profesor de educación física: antecedentes y paradigmas dominantes en su formación. Dins O. Contreras (coord.), *La formación inicial y permanente del profesor de educación física* (pp. 21- 35). Ediciones de la Universidad de Castilla-La Mancha.

Cook, J., Oreskes, N., Doran, P. T., Anderegg, W. R., Verheggen, B., Maibach, E. W., ... & Rice, K. (2016). Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. *Environmental Research Letters*, *11*(4), 048002.

Cornwall, M. G. (1980). Students as teachers: Peer teaching in higher education. Amsterdam: Centrum Onderzoek Wetenschappelijk Onderwijs.

Corrales, A.R. (2009). La integración de las Tecnologías de la información y comunicación (TIC) en el Área de Educación Física. *Hekademos: revista educativa digital, 4,* 45-56.

Cortina-Pérez, B., & Pino Rodríguez, A. M. (2021). Analysing CLIL teacher competences in pre-service preschool education. A case study at the University of Granada. *European Journal of Teacher Education*, 1-19. https://doi.org/10.1080/02619768.2021.1890021

Coyle, D. (2007). Content and language integrated learning: Towards a connected research agenda for CLIL pedagogies. *International journal of bilingual education and bilingualism*, *10*(5), 543-562.

Coyle, D., Hood, P., & Marsh, D. (2010). *CLIL*. Cambridge.

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage publications.

Crum, B. (2017). How to win the battle for survival as a school subject? Reflections on justification, objectives, methods and organization of PE in schools of the 21st century. *Retos, 31*, 238- 244.

Csikszentmihalyi, M. (1988). Motivation and creativity: Toward a synthesis of structural and energetic approaches to cognition. *New Ideas in psychology, 6* (2), 159-176.

Currie, D.H., Kelly, D.M., & Pomerantz, S. (2009). *Girl power: Girls reinventing girlhood*. Peter Lang.

Custodio Espinar, M. (2019). CLIL teacher education in Spain. In *Content and language integrated learning in Spanish and Japanese contexts* (pp. 313-337). Palgrave Macmillan, Cham.

Dale, E. (1969). Audiovisual methods in teaching. The Dryden Press.

Dalke, A.F., Cassidy, K., Grobstein, P., & Blank, D. (2007). Emergent pedagogy: learning to enjoy the uncontrollable—and make it productive. *Journal of Educational Change, 8* (2), 111-130.

Davids, K., Chow, J. Y., and Shuttleworth, R. (2005). A Constraints-based Framework for Nonlinear Pedagogy in Physical Education1. *New Zealand Physical Educator,38*(1), 17-29.

Day, C., & Gu, Q. (2007). Variations in the conditions for teachers' professional learning and development: Sustaining commitment and effectiveness over a career. *Oxford review of education*, *33* (4), 423-443.

De Bono, E., & Diéguez, R. D. (1988). *Seis sombreros para pensar*. Granica.

de Jovellanos, G. (1839). *Obras publicadas e inéditas de D. Gaspar Melchor de Jovellanos* (Vol. 46). M. Rivadeneyra.

de Miguel-Díaz, M. (2005). Cambio de paradigma metodológico en la Educación Superior. Exigencias que conlleva. *Cuadernos de integración europea*, *2,* 16-27.

de Miguel-Díaz, M., Alfaro Rocher, I., Apodaca Urquijo, P., Arias Blanco, J., García Jiménez, E., & Lobato Fraile, C. (2006). *Metodologías de enseñanza y aprendizaje para el desarrollo de competencias: orientaciones para el profesorado universitario ante el Espacio Europeo de Educación Superior*. Madrid: Alianza.

Decreto 106/2022, de 5 de agosto, del Consell, de ordenación y currículo de la etapa de Educación Primaria.

Delgado Noguera, M. Á. (1991). Los estilos de enseñanza en la Educación Física: Propuesta para una reforma de la enseñanza. *Granada: Universidad de Granada.*

DeMuth, D. (2011). Doing feminist and activist learning outcomes: What should students be able to do as a result of this Women's and Gender Studies project/course/ curriculum? *Atlantis, 35* (2), 86–95.

Denzin, N. K. (2017). *The research act: A theoretical introduction to sociological methods*. Routledge.

Denzin, N. K., & Lincoln, Y. S. (2008). Introduction: The discipline and practice of qualitative research. Sage.

Deterding, S., Sicart, M., Nacke, L., O'Hara, K., & Dixon, D. (2011). Gamification. using game-design elements in non-gaming contexts. In *CHI'11 extended abstracts on human factors in computing systems* (pp. 2425-2428).

Devís, J. D. (2018). *Los discursos sobre las funciones de la Educación Física escolar: Continuidades, discontinuidades y retos*. Universitat de València.

Devís, J. D., & Peiró, C. (1992). *Nuevas perspectivas curriculares en educación física: la salud y los juegos modificados* (Vol. 103). Inde.

Devís, J. y Molina, J. P. (2001). *Los estudios del currículum y la Educación Física*. En Vázquez, B. (Coord.), *Bases educativas de la actividad física y el deporte* (pp. 243-276). Síntesis.

Devís-Devís, J. (1994). *Educación física y desarrollo del currículum: un estudio de casos en investigación colaborativa* (Tesis Doctoral). Taken from http://roderic.uv.es/handle/10550/38764 (consulted on 24/07/2023)

Devís-Devís, J. (1996). *Educación Física, deporte y currículum: investigación y desarrollo curricular.* Visor.

Devís, J. y Peiró, C. (2004). Los materiales curriculares en la Educación Física. En A. Fraile (coord.), *Didáctica de la Educación Física. Una perspectiva crítica y transversal* (pp. 63-94). Madrid: Biblioteca Nueva.

Dewey, J. (1928). *How we think.* D.C. Health and Company.

Dewey, J. (1938). Experience and education. Collier Books.

Díaz Lucea, J. (1995). *El currículum de la educación física en la reforma educativa (2ª edición).* Inde.

Díaz, Ó. L., Mediavilla, A. A., Pastor, M. S., & Muñoz, L. F. M. (2020). Las metodologías activas en Educación Física: Una aproximación al estado actual desde la percepción de los docentes en la Comunidad de Madrid. *Retos: nuevas tendencias en educación física, deporte y recreación*, (38), 587-594.

Dörnyei, Z. (2014). Researching complex dynamic systems: 'Retrodictive qualitative modeling' in the language classroom. *Language Teaching*, *47* (1), 80-91.

Dowling, D. O. (2020). *The gamification of digital journalism: innovation in journalistic storytelling*. Routledge.

Dowling, F. (2008). Getting in touch with our feelings: The emotional geographies of gender relations in PETE. *Sport, Education and Society, 13* (3), 247–266. https://doi.org/10.1080/13573320802200560

Egaña, T., Bidegain, E., & Zuberogoitia, A. (2013). ¿Cómo buscan información académica en internet los estudiantes universitarios? Lo que dicen los estudiantes y sus profesores. *Edutec. Revista electrónica de tecnología educativa*, (43), a227-a227.

Ekolu, S. O., & Quainoo, H. (2019). Reliability of assessments in engineering education using Cronbach's alpha, KR and split-half methods. *Global Journal of Engineering Education, 21*(1), 24-29.

Elliot, J. (1993). El cambio educativo desde la investigación-acción. Morata.

Ennis, C. D. (1999). Creating a culturally relevant curriculum for disengaged girls. *Sport, Education and Society, 4* (1), 31–49. https://doi.org/10.1080/1357332990040103

Erbil, D. G., & Kocabaş, A. (2018). Cooperative learning as a democratic learning method. *Journal of Research in Childhood Education*, *32*(1), 81-93.

Estevan, I. (2019). *Teaching Project [Proyecto docente].* Universitat de València.

Estevan, I., Menescardi, C., Castillo, I., Molina-García, J., García-Massó, X., & Barnett, L. M. (2021). Perceived movement skill competence in stability: Validity and reliability of a pictorial scale in early adolescents. *Scandinavian Journal of Medicine & Science in Sports*, *31*(5), 1135-1143.

Estrada, J. L. & Otto, A. (2019). Timing of pedagogical intervention: Oral error treatment in EFL vs. CLIL contexts in primary education in Spain. *Journal of Language and Linguistic Studies, 15*(2), 578-586. https://doi.org/10.17263/jlls.586263

Evangelio, C., González-Víllora, S., Fernandez-Rio, J., & Peiró-Velert, C. (2021). Students' perceptions on three-way pedagogical models hybridization: contributing to the development of active identities. *Sport, Education and Society*, 1-15.

Evans, J. (1990). Defining a Subject: The Rise and Rise of the new Physical Education? *British Journal of Sociology of Education 11* (2), 155–169. doi:10.2307/1392828

Eyler, J., & Gyles, D. E. (1999). *Where's the learning in service-learning?* Jossey-Bass.

Fallows, S. J., & Chandramohan, B. (2001). Multiple Approaches to Assessment: Reflections on Use of Tutor, Peer and Self-assessment. *Teaching in Higher Education, 6*(2), 229-246.

Felis-Anaya, M., Martos-Garcia, D., & Devís-Devís, J. (2018). Socio-critical research on teaching physical education and physical education teacher education: A systematic review. *European Physical Education Review, 24* (3), 314-329.

Fernández, A. B. (2009). *Desarrollo y evaluación de competencias en educación superior* (Vol. 23). Madrid: Narcea.

Fernández-Río, J., Calderón, A., Alcalá, D. H., Pérez-Pueyo, Á., & Cebamanos, M. A. (2016a). Modelos pedagógicos en educación física: consideraciones teórico-prácticas para docentes. *Revista española de educación física y deportes*, (413), 55-75.

Fernández-Río, J., Méndez-Giménez, A., & Estrada, J. A. C. (2016). Pasión por el deporte, actividad física vigorosa y satisfacción con la vida. *Revista de Psicología del Deporte*, *25*(1), 73-79.

Fernandez-Rio, J., Rivera-Pérez, S., & Iglesias, D. (2022). Cooperative learning interventions and associated outcomes in future teachers: A systematic review:[[es]] Intervenciones de aprendizaje cooperativo y resultados asociados en futuros docentes: Una revision sistemática. *Revista de Psicodidáctica (English ed.)*,*27*(2), 118-131.

Ferrer Torres, A. (2012). Análisis de la reforma de Thomas Arnold a través del concepto de Función Moralizadora de Hernández Álvarez, JL (1996): El Deporte Moderno y la génesis del Movimiento Olímpico. *Citius, Altius, Fortius: Humanismo, Sociedad y Deporte: Investigaciones y ensayos*.

Fink, L. D. (2013). *Creating significant learning experiences: An integrated approach to designing college courses*. John Wiley & Sons.

Firwana, A., Abu Shouqer, M., & Aqel, M. (2021). Effectiveness of E-learning environments in developing skills for designing E-tivities based on Gamification for teachers of technology in Gaza. *Education in the Knowledge Society: EKS*.

Flintoff, A., & Scraton, S. (2006). Girls and physical education. *The Handbook of Physical Education,* 767-783.

Flory, S.B., Tischler, A., & Sanders, S. (2014). *Sociocultural Issues in Physical Education: Case Studies for Teachers*. Rowman & Littlefield.

Fraile-Aranda, A., Pastor, V. M. L., Oliva, F. J. C., & Romero, R. (2013). La evaluación formativa en docencia universitaria y el rendimiento académico del alumnado. *Aula abierta*, *41*(2), 23-34.

Furco, A., & Billig, S. H. (Eds.). (2002). *Service learning: The essence of the pedagogy*. IAP.

Gallego, L. V. (2006). Evaluación del aprendizaje para promover el desarrollo de competencias. *Educatio siglo XXI*, *24*, 57-76.

García, J., & Berruezo, P. (1994). Psicomotricidad y educación infantil. *Impreso en España*.

García-Rico, L., Carter-Thuillier, B., Santos-Pastor, ML, & Martínez-Muñoz, LF (2020). Training Physical Education Teachers for Social Justice: Effects of Service-

Learning on Chilean and Spanish Students. *International Journal of Social Justice Education, 9* (2), 29-47.

García-Ros, R. (2011). Análisis y validación de una rúbrica para evaluar habilidades de presentación oral en contextos universitarios. *Electronic Journal of Research in Educational Psychology, 9*(3), 1043-1062.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of distance education*, *15*(1), 7-23.

Gerson, J.M., & Peiss, K. (1985). Boundaries, negotiation, consciousness: Reconceptualizing gender relations. *Social problems*, *32* (4), 317-331.

Gessa Perera, A. (2011). La coevaluación como metodología complementaria de la evaluación del aprendizaje: análisis y reflexión en las aulas universitarias. *Revista de educación, 354*, 749-764.

Gil-Gómez, J. & Maravé-Vivas, M. (2018). L'aprenentatge-servei en educació física: una proposta de millora personal i social. *Anuari de l'Agrupació Borrianenca de Cultura: revista de recerca humanística i científica*, (29), 19-28.

Gil-Gómez, J., Chiva-Bartoll, O., & Martí-Puig, M. (2015). The impact of service-learning on the training of pre-service teachers Analysis from a physical education subject. *European Physical Education Review, 21* (4), 467-484. https://doi.org/10.1177/1356336X15582358

Gillies, R. M., & Boyle, M. (2010). Teachers' reflections on cooperative learning: Issues of implementation. *Teaching and teacher Education*, *26*(4), 933-940.

Glück, J., Ernst, R., & Unger, F. (2002). How creatives define creativity: Definitions reflect different types of creativity. *Communication Research Journal, 14* (1), 55-67

Gómez, R. (2012). *Evaluación de la personalidad eficaz en población universitaria. Tesis doctoral*. Huelva: Universidad de Huelva

Gómez-Criado, C. & Valverde-Esteve, T. Nonlinear pedagogy and its application in a volleyball didactic unit: a practical approach. *Challenges: new trends in physical education, sports and recreation,* (39), 805-810.

Gomez-Ruiz, M. Á., & Quesada-Serra. (2017). Coevaluación o evaluación compartida en el contexto universitario: la percepción del alumnado de primer curso. *Revista Iberoamericana de Evaluación Educativa*, *10*(2), 9-30.

González-Peiteado, M. (2013). Los estilos de enseñanza y aprendizaje como soporte de la actividad docente. *Revista de estilos de aprendizaje*, *6*(11), 51-70.

Granero-Gallegos, A., Baños, R., & Baena-Extremera, A. (2021). Psychodidactic Variables and Academic Performance in Physical Education. *Frontiers in Psychology*, *12*, 652702.

Gruenewald, D. A. (2003). The best of both worlds: A critical pedagogy of place. *Educational researcher*, *32* (4), 3-12.

Guilford, J. P. (1950). Creativity. *American Psychologist, 5* (9), 444-454.

Guilford, J.P., & Strom, R.D. (1978). *Creativity and education*. Paidós.

Gutiérrez del Moral, MJ (2009). Cooperative work, its design and its evaluation. Difficulties and proposals. Univest09.

Haerens, L., Kirk, D., Cardon, G., & De Bourdeaudhuij, I. (2011). Toward the development of a pedagogical model for health-based physical education. *Quest*, *63*(3), 321-338.

Hamodi, C., López Pastor, V. M., & López Pastor, A. T. (2015). Medios, técnicas e instrumentos de evaluación formativa y compartida del aprendizaje en educación superior. *Perfiles educativos*, *37*(147), 146-161.

Hänze, M., & Berger, R. (2007). Cooperative learning, motivational effects, and student characteristics: An experimental study comparing cooperative learning and direct instruction in 12th grade physics classes. *Learning and instruction*, *17*(1), 29-41.

Hardman, K. (2013). Global issues in physical education: Worldwide physical education survey III findings. *Intl. J. Phys. Educ*, *50*(3), 15-28.

Hattie, J. (2009). Visible learning. A synthesis of over 800 meta-analyses relating to achievement. New York, NY: Routledge

Hernández Carrera, R. M. (2014). La investigación cualitativa a través de entrevistas: su análisis mediante la teoría fundamentada. *Cuestiones Pedagógicas, 23, 187-210*.

Herrador, M., Huertas, J.A. i Lara, C. (2009). LOE and LOGSE. A change of perspective in physical education. *The International Journal of Medicine and Science in Physical Education and Sport, 5*(1), 13-24.

Herrero-Molleda, A., García-López, J., & Pérez-Pueyo, Á. (2023). Situación de aprendizaje en Educación Física y Física y Química: el enfoque interdisciplinar en la LOMLOE (Learning situation in Physical Education and Physics and Chemistry: interdisciplinary work in LOMLOE). *Retos*, *47*, 146-155.

Hipkins, R., & Boyd, S. (2011). The recursive elaboration of key competencies as agents of curriculum change. *Curriculum Matters, 7,* 70.

Hortigüela-Alcalá, D., Pérez-Pueyo, Á., & López-Pastor, V. (2015). Implicación y regulación del trabajo del alumnado en los sistemas de evaluación formativa en educación superior. *RELIEVE. Revista Electrónica de Investigación y Evaluación Educativa*, *21*(1), 1-15.

Hristovski, R., Davids, K., Araujo, D., & Passos, P. (2011). Constraints-induced emergence of functional novelty in complex neurobiological systems: a basis for creativity in sport. *Nonlinear Dynamics-Psychology and Life Sciences, 15* (2), 175-206.

Hytten, K., & Bettez, S.C. (2011). Understanding education for social justice. *Educational foundations, 25,* 7-24.

Jackson, M. (1973). Debate: A neglected teaching tool. *Peabody Journal of Education, 50*(2), 150-154

Jess, M., Carse, N., & Keay, J. (2016). The primary physical education curriculum process: more complex than you might think!! *Education 3-13*, *44* (5), 502-512.

Jess, M., McMillan, P., Carse, N., & Munro, K. (2021). The personal visions of physical education student teachers: putting the education at the heart of physical education. *The Curriculum Journal*, *32* (1), 28-47.

Jewett, A. E., & Bain, L. L. (1985). *The curriculum process in physical education (1st ed.).* Brown & Benchmark.

Jiménez, C., Álvarez, B., Gil, JA, Murga, MA, Téllez, JA (2006). Education, diversity of the most capable and gender stereotypes. Relief, 12, 2, 261-287

Johnson, D. W., & Johnson, R. T. (2008). Social interdependence theory and cooperative learning: The teacher's role. In *The teacher's role in implementing cooperative learning in the classroom* (pp. 9-37). Springer.

Johnson, D. W., & Johnson, R. T. (2014). Cooperative Learning in 21st Century.[Aprendizaje cooperativo en el siglo XXI]. *Anales de Psicología/Annals of Psychology*, *30*(3), 841-851.

Johnson, D. W., Johnson, R. T., & Holubec, E. J. (1999). *El aprendizaje cooperativo en el aula* (Vol. 4). Paidós.

Johnson, D. W., Johnson, R. T., & Stanne, M. B. (2000). Cooperative learning methods: A meta-analysis. University of Minnesota Press.

Johnson, D.W., & Johnson, R.T. (1999). Making cooperative learning work. *Theory into Practice*, *38* (2), 67-73.

Jones, C. (2010). Interdisciplinary approach-advantages, disadvantages, and the future benefits of interdisciplinary studies. *Essai*, *7*(1), 76-81.

Jonsson, A., & Svingby, G. (2007). The use of scoring rubrics: Reliability, validity and educational consequences. *Educational research review*, *2*(2), 130-144.

Jorba, J. y Sanmartí, N. (1996). *Enseñar, aprender y evaluar: un proceso de regulación contínua.* Ministerio de Educación.

Joyce y Showers (1988). *Student Achievement Through Staff Development.* Longman.

Joyce, B., & Weil, M. (1972). *Models of Teaching*. Allyn and Bacon.

Julián-Clemente, J.A., Peiró-Velert, C., Zaragoza-Casterad, J., & Aibar-Solana, A. (2021). *Educación Física relacionada con la Salud.* In: *Modelos pedagógicos en Educación Física: qué, cómo, por qué y para qué.* Servicio de Publicaciones de la Universidad de León.

June, A., & Andreoletti, C. (2020). Participation in intergenerational service-learning benefits older adults: A brief report. *Gerontology & Geriatrics Education, 41* (2), 169-174.

Kackar-Cam, H., & Schmidt, J. A. (2014). Community-based service-learning as a context for youth autonomy, competence, and relatedness. *The High School Journal*, *98* (1), 83-108.

Kao, Y. T. (2022). Understanding and addressing the challenges of teaching an online CLIL course: a teacher education study. *International Journal of Bilingual Education and Bilingualism, 25*(2), 656-675. https://doi.org/10.1080/13670050.2020.1713723

Kapp, K. M. (2012). *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education*. John Wiley & Sons.

Karpicke, J. D., & Blunt, J. R. (2011). Retrieval practice produces more learning than elaborative studying with concept mapping. *Science, 331*, 772–775.

Keay, J. K., Carse, N., & Jess, M. (2019). Understanding teachers as complex professional learners. *Professional Development in Education*, *45*(1), 125-137.

Kelly, M. (2015). Feminist identity, collective action, and individual resistance among contemporary US feminists, *Women's Studies International Forum, 48,* 81–92. https://doi.org/10.1016/j.wsif.2014.10.025

Kelso, J. S. (1997). *Dynamic Patterns: The Self-organization of Brain and Behavior*. MIT press.

Kennedy, K.J. (2005). *Changing Schools for Changing Times: New directions for the School Curriculum in Hong Kong*. Chinese University Press.

Kirk, D. (1990). *Educación física y currículum* (Vol. 3). Universitat de València.

Kirk, D. (2006). The Obesity Crisis and School Physical Education. *Sport, Education and Society, 11* (2), 121–133. https://doi.org/10.1080/13573320600640660

Kirk, D. (2012). Physical education, discourse, and ideology: Bringing the hidden curriculum into view. *Quest, 44* (1), 35–56. https://doi.org/10.1080/00336297.1992.10484040

Kirk, D. (2013). Educational value and models-based practice in physical education. *Educational Philosophy and Theory*, *45*(9), 973-986.

Klare, K. E. (1988). The labor-management cooperation debate: a workplace democracy perspective. Harvard Civil Right-Civil Liberties Law review, *23*, 39.

Klein, E. J., Taylor, M., Onore, C., Strom, K., & Abrams, L. (2013). Finding a third space in teacher education: Creating an urban teacher residency. *Teaching Education, 24*(1), 27-57. https://doi.org/10.1080/10476210.2012.711305

Kolb, D. A. (2014). *Experiential Learning: Experience as the Source of Learning and Development*. FT press.

Kolb, D.A. (1984). *Experiential Learning. Experience as the Source of Learning and Development*. Prentice Hall.

Kossybayeva, U., Shaldykova, B., Akhmanova, D., & Kulanina, S. (2022). Improving teaching in different disciplines of natural science and mathematics with innovative technologies. *Education and Information Technologies*, 1-23. https://doi.org/10.1007/s10639-022-10955-3

Kratzer, J., Oger, Th, A.J., & van Engelen, J.m.l. (2004). Stimulating the potential: Creative performance and communication in innovation teams. *Creativity and Innovation Management, 13,* 63-71.

Lameiras, M. & Rodríguez, Y. (2002). Evaluation of modern sexism in adolescents. *Journal of Social Psychology, 17* (2), 119-127.

Langnes, T.F., & Fasting, K. (2016). Identity constructions among breakdancers. *International Review for the Sociology of Sport*, *51* (3), 349-364. doi:10.1177/1012690214526402

Langnes, T.F., & Fasting, K. (2017). Gender constructions in breaking. *Sport in Society*, *20* (11), 1596-1611. DOI: 10.1080/17430437.2017.1284809

Lawson, A. E. (1995). *Science Teaching and the Development of Thinking*. Wadsworth publishing company.

Leblanc, L. (2001). *Pretty in Punk: Girls' Gender Resistance in a Boys' Subculture.* Rutgers University Press.

Leech, N. L., & Onwuegbuzie, A. J. (2007). An array of qualitative data analysis tools: A call for data analysis triangulation. *School Psychology Quarterly*, *22*(4), 557-584.

León Ninin, J. M., Colina Blanco, A. E., Held, A., & Planer-Friedrich, B. (2022). Environmental Forensics: Mock Trial of a Chromium Contamination Case as a Tool for Interdisciplinary Teaching and Improvement of Soft Skills. *Journal of Chemical Education*, *99*(10), 3452-3460. https://doi.org/10.1021/acs.jchemed.2c00275

Lewin, K. (1951). *Field theory in social sciences.* Harper & Row.

Lewis, A., & Smith, D. (1993). Defining higher order thinking. *Theory into Practice*, *32*(3), 131-137.

Lewis, C., Perry, R., & Hurd, J. (2004). A deeper look at lesson study. Educational Leadership, 61(5), 18.

Light, R. (2008). Complex Learning Theory—Its Epistemology and Its Assumptions About Learning: Implications for Physical Education. *Journal of Teaching in Physical Education, 27* (1), 21-37.

Lindgren, R., & Barker, D. (2019). Implementing the Movement-Oriented Practising Model (MPM) in physical education: empirical findings focusing on student learning. *Physical Education and Sport Pedagogy*, *24*(5), 534-547.

Livingston, L. (2010). Teaching creativity in higher education. *Arts Education Policy and Review, 111*, 59-62.

Lizandra Mora, J., Menescardi, C., & Valverde Esteve, T. (2020). Diseño colaborativo de una prueba teórica de educación física en educación superior. *Tándem: didáctica de la educación física*, 6(20), 3629-3634.

Lizandra, J., Valverde-Esteve, T., & García-Massó, X. (2020). Use of mobile devices as a facilitator of the practice of physical activity in physical education lessons: experience in higher education. *Journal of Physical Education and Sport*, *20*(6), 3629-3634.

Lleixà, T. (1989). La educación física en la escuela. Hacía un proyecto curricular. *Apunts, 16-17*, 48-51.

Lo, Y. (2020). *Professional Development of CLIL Teachers*. Cham: Springer.

Locke, J. (2007). *Some Thoughts Concerning Education: (Including Of the Conduct of the Understanding)*. Courier Corporation.

Loh, R. C. Y., & Ang, C. S. (2020). Unravelling Cooperative Learning in Higher Education: A Review of Research. *Research in Social Sciences and Technology*, *5*(2), 22-39.

López Pastor, V. M; Barba, J.J.; Monjas, R. et al. (2007). Trece años de Evaluación compartida en Educación Física. *Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte, 7*(26), 69-86.

López, C. R. (1981). *Criterios para una evaluación formativa: Objetivos. Contenido. Profesor. Aprendizaje. Recursos* (Vol. 56). Madrid: Narcea.

López-Pastor, V. M. (2006). *La evaluación en educación física. Revisión de los modelos tradicionales y planteamiento de una alternativa: la evaluación formativa y compartida*. Miño y Dávila.

López Pastor, V. M. (2012). Evaluación formativa y compartida en la universidad: clarificación de conceptos y propuestas de intervención desde la Red Interuniversitaria de Evaluación Formativa. *Psychology, Society & Education, 4*(1), 117-130.

López-Pastor, V. M. (2011). Best practices in academic assessment in higher education: A case in formative and shared assessment. *Journal of Technology and Science Education, 1*(2), 25-39.

López-Pastor, V. M., Castejón, J., Sicilia-Camacho, A., Navarro-Adelantado, V., i Webb. G. (2011). The process of creating a cross-university network for formative and shared assessment in higher education in Spain and its potential applications. *Innovations in Education and Teaching International, 48*(1), 79-90

López-Pastor, V. M., Pascual, M. G., & Martín, J. B. (2005). La participación del alumnado en la evaluación: la autoevaluación, la coevaluación y la evaluación compartida. *Rev. Tándem Didáctica Educación Física, 17*, 21-37.

López-Pastor, V. M., Pérez-Pueyo, Á., Barba, J. J., & Lorente-Catalán, E. (2016). Percepción del alumnado sobre la utilización de una escala graduada para la autoevaluación y coevaluación de trabajos escritos en la formación inicial del profesorado de educación física (FIPEF). *Cultura, ciencia y deporte, 11*(31), 37-50.

López Pastor, V. M., & Pérez Pueyo, Á. (2017). Evaluación formativa y compartida en educación: experiencias de éxito en todas las etapas educativas. Universidad de León.

López-Pastor, V.M. (2009). Fundamentación teórica y revisión del estado de la cuestión. In V.M. LópezPastor (Coord.), *Evaluación Formativa y Compartida en Educación Superior. Propuestas, técnicas, instrumentos y experiencias* (pp. 45-64). Narcea.

López-Pastor, V.M. y Sicilia-Camacho, A. (2017). Formative and shared assessment in higher education. Lessons learned and challenges for the future. *Assessment & Evaluation in Higher Education, 42*(1), 77-97

López-Pastor, VM, Hortugüela, D., Pérez, A., Manrique, JC, Monreal, I., Arribas, JM, ... & Vallés, C. (2015). The Formative and Shared Evaluation Network in Higher Education: purposes, organization and results obtained. *Refereed Journal of the Center for Management Research and Studies, 20,* 78-86.

Lowe, M., Adlakha, D., Sallis, J. F., Salvo, D., Cerin, E., Moudon, A. V., & Giles-Corti, B. (2022). City planning policies to support health and sustainability: an

international comparison of policy indicators for 25 cities. *The Lancet Global Health*, *10*(6), e882-e894.

Lowenstein, E., Grewal, I.K., Erkaeva, N., Nielsen, R., & Voelker, L. (2018). Place-Based Teacher Education: A Model Whose Time Has Come. *Issues in Teacher Education, 27* (2), 36-52.

Lucea, J. D. (2005). *La evaluación formativa como instrumento de aprendizaje en Educación Física* (Vol. 35). Barcelona: Inde.

Lucznik, K. (2015). Between minds and bodies: Some insights about creativity from dance improvisation. *Technoetic Arts, 13* (3), 301-308.

Maheady, L., Harper, G. F., & Sacca, M. K. (1988). Peer-mediated instruction: A promising approach to meeting the diverse needs of LD adolescents. *Learning Disability Quarterly*, *11*(2), 108-113.

Maier, N. R. (1933). An aspect of human reasoning. *British Journal of Psychology*, *24*(2), 144-155.

March, A. F. (2010). La evaluación orientada al aprendizaje en un modelo de formación por competencias en la educación universitaria. *REDU: Revista de Docencia Universitaria*, *8*(1), 11-34.

Marcos, R. I. S., Fernández, V. L., González, M. T. D., & Phillips-Silver, J. (2020). Promoting children's creative thinking through reading and writing in a cooperative learning classroom. *Thinking Skills and Creativity*, *36*, 100663.

Marquès-Blanqué, M. (2009). La evaluación de competencias en la Educación Superior: retos e instrumentos. *Revista de Educación y Derecho – Education and Law Review, 1*.

Martín del Buey, F., Granados, P.; Martín, Mª E., Juárez, A., García, A. & Álvarez, M. (2000). *Desarrollo de la Personalidad Eficaz en Contextos Educativos*. Marco Conceptual. Oviedo: FMB.

Martín, J. J. B., Aguado, R. M., García, J. G., et al. (2006). La Evaluación en Educación Física: revisión de modelos tradicionales y planteamiento de una alternativa: la

evaluación formativa y compartida. *Retos: nuevas tendencias en educación física, deporte y recreación*, *10*, 31-41.

Martin, J., & Beese, J. A. (2016). Pink is for girls: sugar and spice and everything nice—A case of single-sex education. *Journal of Cases in Educational Leadership, 19* (4), 86-101.

Martínez, L., Martín, M., & Capllonch, M. (2009). Una experiencia de desarrollo profesional del docente universitario de Educación Física a través de una práctica crítica, reflexiva y colaborativa. *Cultura y Educación*, *21*(1), 95-106.

Martínez-Gómez, L. M. (1966). Del problema de la" Physis" al problema del movimiento (Book Review). *Arbor*, *63*(243), 373.

Martos-García, D. (2018). Las diversidades funcionales en educación física: propuestas críticas para la provocación y la inclusión. En E. Lorente-Catalán y D. Martos-García (Eds.), Educación Física y pedagogía crítica: Propuestas para la transformación personal y social (pp. 141-160). Valencia: Publicacions de la Universitat de València.

Mayor, E. M., Boto, R. G., & del Valle, A. S. (2004). Las escuelas gimnásticas y su relación con la actividad física y educación física actuales. *Lecturas: Educación física y deportes*, (73), 3.

McCrone, K. (2014). *Sport and the physical emancipation of English women (RLE Sports Studies): 1870-1914*. Routledge.

McGonigal, J. (2011). *Reality is broken: Why games make us better and how they can change the world*. Penguin.

McMillan, P., & Jess, M. (2021). Embracing complex adaptive practice: the potential of lesson study. *Professional Development in Education, 47*(2-3), 273-288. https://doi.org/10.1080/19415257.2021.1884588

Meaney, K. S., Housman, J., Cavazos, A., & Wilcox, M. L. (2012). Examining Service-Learning in a Graduate Physical Education Teacher Education Course. *Journal of the Scholarship of Teaching and Learning*, *12*(3), 108-124.

Menescardi, C., Suárez-Guerrero, C., & Lizandra, J. (2021). Formación del profesorado de educación física en el uso de aplicaciones tecnológicas. *Apunts. Educación física y deportes*, *2*(144), 33-43.

Metzler, M.W. (2005). *Instructional Models for Physical Education (2ª ed.).* Holcomb Hathaway.

Michael, J. (2006). Where's the evidence that active learning works? *Advances in Physiology of Education,* 30, 159-167.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.

Miller, J.P. (1999). Making connections through holistic learning, *Educational Leadership* 56, 4, 46-48.

Miller, J.P. (2019). *The holistic curriculum* . University of Toronto press.

Mitton-Kükner, J., Nelson, C., & Desrochers, C. (2010). Narrative inquiry in service learning contexts: Possibilities for learning about diversity in teacher education. *Teaching and Teacher Education*, *26*(5), 1162-1169.

Møgelvang, A., & Nyléhn, J. (2023). Interdependence between perceived cooperative learning, sense of belonging, and generic skills in undergraduate STEM education. *Nordic Journal of STEM Education*, *7*(1), 1-14.

Mokhtar, N. H., Halim, M. F. A., & Kamarulzaman, S. Z. S. (2011). The effectiveness of storytelling in enhancing communicative skills. *Procedia-Social and Behavioral Sciences*, *18*, 163-169.

Molina, J.P. (1999). *Estrategias metodológicas en la enseñanza de la Educación Física escolar.* En M. Villamón (Dir.), *Formación de los maestros especialistas en Educación Física* (pp. 135-156). Generalitat Valenciana.

Molina, P., Devís, J., & Peiró, C. (2008). Materiales curriculares: clasificación y uso en Educación Física. *Pixel Bit. Revista de medios y educación, 33*, 183-197.

Molina, P., Valencia-Peris, A., & Gómez-Gonzalvo, F. (2016). Innovación docente en educación superior: Edublogs, evaluación formativa y aprendizaje

colaborativo. *Profesorado, Revista de Currículum y Formación del Profesorado*, *20*(2), 432-450.

Molina-García, J., Menescardi, C., Estevan, I., & Queralt, A. (2021). Associations between Park and Playground Availability and Proximity and Children's Physical Activity and Body Mass Index: The BEACH Study. *International Journal of Environmental Research and Public Health*, *19*(1), 250.

Montávez Martín, M. (2012). La expresión corporal en la realidad educativa: Descripción y análisis de su enseñanza como punto de referencia para la mejora de la calidad docente en los centros públicos de educación primaria de la ciudad de Córdoba. Tesis Doctoral.

Mosquera, M. H. A., Vallés, J. E. G., & de Luna, Á. B. M. (2016). Ventajas e inconvenientes del uso de dispositivos electrónicos en el aula: percepción de los estudiantes de grados en comunicación. *Revista de la SEECI*, (41), 136-154.

Mosston, M. (1966). *Teaching Physical Education: From Command to Discovery*. MacMillan Publishing Company.

Moya, M., Glick, P., Expósito, F., De Lemus, S., & Hart, J. (2007). It's for your own good: Benevolent sexism and women's reactions to protectively justified restrictions. *Personality and Social Psychology Bulletin, 33* (10), 1421-1434.

Murillo-Zamorano, L. R., Sánchez, J. Á. L., & Godoy-Caballero, A. L. (2019). How the flipped classroom affects knowledge, skills, and engagement in higher education: Effects on students' satisfaction. *Computers & Education*, *141*, 103608.

Muros, B. (2013). Autoevaluación: bases epistemológicas y autoconocimiento. Una experiencia en el aula universitaria. *REVALUE*, *2*(1).

Napaporn, S., Maneewan, S., Thamwipat, K., & Nittayathammakul, V. (2023). The cloud-powered hybrid learning process to enhance digital natives' analytical reading skills. *International Journal of Advanced Computer Science and Applications*, *14*(1), 622-627.

Nelson, J.A., & Sneller, S. (2011). Ensuring quality service-learning experiences for at-risk adolescents. *The Prevention Researcher, 18* (1), 14-18.

Newell, K, M. (1986). Constraints on the development of co-ordination. In: Wade, M., G.; Hiting, H.T.A. (eds): *Motor Development: Aspects of Control and Coordination.* Martinus Nijhof. pp. 341 360.

Newell, KM, Van Emmerik, REA, & McDonald, PV (1989). Biomechanical constraints and action theory. *Human Movement Science, 8* (4), 403-409.

Newman, F.M. (1990). Higher order thinking in teaching social studies: A rationale for the assessment of classroom thoughtfulness. *Journal of Curriculum Studies, 22*, 41-56.

Nikolić, V., Petković, D., Denić, N., Milovančević, M., & Gavrilović, S. (2019). Appraisal and review of e-learning and ICT systems in teaching process. *Physica A: Statistical Mechanics and its Applications*, *513*, 456-464.

O'Flaherty, J., Phillips, C. (2015). The use of flipped classroom in higher education: A scoping review. *Internet and Higher Education, 25,* 85-95.

Oliva, H. A. (2016). La gamificación como estrategia metodológica en el contexto educativo universitario. *Realidad y Reflexión, 16(44),* 108-118.

Opazo, H., Aramburuzabala, P., & Mcilrath, L. (2019). Service-learning in higher education: Eleven perspectives of a global movement. *Staff. Journal of Pedagogy, 71* (3), 15-23.

Ortiz-Colón, A. M., Jordán, J., & Agredal, M. (2018). Gamificación en educación: una panorámica sobre el estado de la cuestión. *Educação e pesquisa*, *44*.

Ortuño, M., Aja, E., Bueno, M. et al. (2009). Experiencia docente contrastada de un grupo de adaptado a las directrices del Espacio Europeo. *Revista de Educación y Derecho – Education and Law Review, 1*.

Otwinowska, A., & Foryś, M. (2017). They learn the CLIL way, but do they like it? Affectivity and cognition in upper-primary CLIL classes. *International Journal of Bilingual Education and Bilingualism, 20*(5), 457-480. https://doi.org/10.1080/13670050.2015.1051944

Panadero, E. & Jonsson, A. (2013). The use of scoring rubrics for formative assessment purposes revisited: A review. *Educational Research Review, 9,* 129-144

Papastergiou, M. (2009). Exploring the potential of computer and video games for health and physical education: A literature review. *Computers & Education*, *53*(3), 603-622.

Parente, D. (2016). Gamificación en la educación. *Gamificación en aulas universitarias*, *11*, 15.

Parra, K. R. T. (2014). Carácter científico de la Educación Física, raíces y evolución. *EmásF: revista digital de educación física*, (28), 56-60.

Pasmanik Volochinsky, D., Rodríguez Araneda, M. J., Espejo, R., Isabel, M., & Tarride Fernández, M. (2016). Reconstrucción del ethos de la ingeniería civil industrial en Chile: un acercamiento preliminar. *Acta bioethica*, *22*(2), 347-356.

Patton, M.Q. Qualitative Research and Evaluation Methods, 3rd ed.; Sage: Thousand Oaks, CA, USA, 2002.

Peiró Velert, C., & Julián Clemente, J. A. (2015). Los modelos pedagógicos en Educación Física: un enfoque más allá de los contenidos curriculares. *Tándem: Didáctica de la educación física, 50,* 6-15.

Peiró-Velert, C., Pérez-Gimeno, E. y Valencia-Peris, A. (2012). Facilitación de la autonomía en el alumnado dentro de un Modelo Pedagógico de Educación Física y Salud. *Tándem. Didáctica de la Educación Física, 40,* 28-44.

Peralta, L. R., O'Connor, D., Cotton, W. G., & Bennie, A. (2016). Pre-service physical education teachers' indigenous knowledge, cultural competency and pedagogy: A service learning intervention. *Teaching Education*, *27*(3), 248-266.

Perassi, Z. (2008). La evaluación en educación: un campo de controversias. *San Luis: Ediciones del Proyecto y Ediciones LAE*.

Pérez Cañado, M. L. (2016). Teacher training needs for bilingual education: In-service teacher perceptions. *International Journal of Bilingual Education and Bilingualism, 19*(3), 266-295. https://doi.org/10.1080/13670050.2014.980778

Pérez Cañado, M. L., & Lancaster, N. K. (2017). The effects of CLIL on oral comprehension and production: a longitudinal case study. *Language, Culture and Curriculum, 30*(3), 300-316. https://doi.org/10.1080/07908318.2017.1338717

Pérez, RG, Catalán, MAR, García, OB, González-Piñal, R., Sánchez, RB, & Pinto, ER (2010). Student attitudes towards gender equality. *Journal of Educational Research, 28* (1), 217-232.

Pérez-Ordás, R., Nuviala, A., Grao-Cruces, A., & Fernández-Martínez, A. (2021). Implementing service-learning programs in physical education; teacher education as teaching and learning models for all the agents involved: A systematic review. *International Journal of Environmental Research and Public Health, 18* (2), 669.

Pérez-Ramírez, C. (1993). Evolución histórica de la Educación Física. *Educación Física y Deportes*, *33*, 24-38.

Phillips, B. (2021). *Reciprocal Empowerment Through Remote Service Learning: How to Create Learning Opportunities That Embrace Difference and Foster Social Justice*. In Cases on Active Blended Learning in Higher Education (pp. 65-85). IGI Global.

Piaget, J. (1970). Piaget's Theory. En P. H. Mussen (Ed.). *Carmichael's Manual of Child Psychology* (Vol. 1). Wiley.

Plano-Clark, V. L. (2019). Meaningful integration within mixed methods studies: Identifying why, what, when, and how. *Contemporary Educational Psychology, 57*, 106-111. https://doi.org/10.1016/j.cedpsych.2019.01.007

Prat, Q., Camerino, O. y Coiduras, J. Ll. (2013). Introducción de las TIC en educación física. Estudio descriptivo sobre la situación actual. Apunts. Educación física y deportes, 3(113), 37-44.

Prater, M. A., Serna, L., & Nakamura, K. K. (1999). Impact of peer teaching on the acquisition of social skills by adolescents with learning disabilities. *Education and Treatment of Children*, 19-35.

Prigogine, I., & Nicolis, G. (1977). Self-organization. *Non-Equilibrium System*. Wiley.

Prins, F. J., Sluijsmans, M. A., Kirschner, P. A. & Strijbos, J. W. (2005). Formative Peer Assessment in a CSCL Environment: a Case Study. *Assessment & Evaluation in Higher Education, 30* (4), 417-444.

Puig, JM, Batlle, R., Bosch, C., & Palos, J. (2007). Aprendizaje-servicio y Educación para la Ciudadanía [Service-Learning and Education for the Citizenship]. Octaedro

Queralt, A., & Molina-García, J. (2019). Physical activity and active commuting in relation to objectively measured built-environment attributes among adolescents. *Journal of Physical Activity and Health*, *16*(5), 371-374.

Rao, B., & Strauss, S. (2018, March 5-7). Adult women's empowerment: learning through peer teaching in ICT-enhanced courses around employment skills and social issues in Indian villages. Proceedings of INTED2018, Valencia, Spain.

Real Decreto 157/2022, de 1 de marzo, por el que se establecen la ordenación y las enseñanzas mínimas de la Educación Primaria.

Renshaw, I., & Chow, J. Y. (2019). A constraint-led approach to sport and physical education pedagogy. *Physical Education and Sport Pedagogy*, *24*(2), 103-116.

Resnick, L. (1987). Education and learning to think. Washington, DC: National Academy Press.

Rigal, R. (2006). *Educación motriz y educación psicomotriz en preescolar y primaria*. Inde.

Rodrigues, L. F., Oliveira, A., & Rodrigues, H. (2019). Main gamification concepts: A systematic mapping study. *Heliyon*, *5*(7), e01993.

Rodríguez, P.L. (2011). La investigación en Educación Física. *Educatio Siglo XXI, 29*(1), 195-210.

Rodríguez Gómez, G., Ibarra Saiz, M., & García Jiménez, E. (2013). Autoevaluación, evaluación entre iguales y coevaluación: conceptualización y práctica en las universidades españolas. *Revista de Investigación en Educación, 2 (11), 198-210.*

Rodriguez Lajo, M., Vila Baños, R., & Freixa Niella, M. (2008). Gender barriers and attitudes towards social networks in university students of the faculties of education. *Journal of Educational Research,* 26, 1, 45-72

Rodríguez Sánchez, CJ (2015). *Ambientes de aprendizaje colaborativo en comunidades artístico-pedagógicas.* Doctoral Thesis. Complutense University of Madrid.

Roger, T., & Johnson, D. W. (1994). An overview of cooperative learning. *Creativity and Collaborative Learning*, 1-21.

Rosa, M. (1992). Historia de la educación física. *Cuadernos de sección. Educación*, *5*, 27-47.

Ross, J. A. (2006). The reliability, validity, and utility of self-assessment. *Practical Assessment, Research, and Evaluation, 11*(1), 10. https://doi.org/10.7275/9wph-vv65

Rovegno, I., & Dolly, J. (2006). Constructivist perspectives on learning. In D. Kirk, D. Macdonald & M. O'Sullivan (Eds.). *The Handbook of Physical Education* (pp. 242–261). Sage.

Royal Decree 157/2022, of March 1, which establishes the organization and minimum teaching of Primary Education.

Ruiz, M. Á. G., & Serra, V. Q. (2017). Coevaluación o evaluación compartida en el contexto universitario: la percepción del alumnado de primer curso. *Revista Iberoamericana de Evaluación Educativa*, *10*(2), 9-30.

Ruiz-Montero, PJ, Chiva-Bartoll, O., Salvador-García, C., & González-García, C. (2020). Learning with older adults through intergenerational service learning in physical education teacher education. *Sustainability, 12* (3), 1127.

Sáenz-López, P. (1999). La importancia de la Educación Física en Primaria. *Apunts. Educación Física y Deportes, 57*, 20-31.

Sáiz, M. S. I., Gómez, G. R., & Ruiz, M. Á. G. (2012). La evaluación entre iguales: beneficios y estrategias para su práctica en la universidad (Benefits of Peer Assessment and Strategies for Its Practice at University). *Revista de educación*, *359*, 206-231.

Salguero, A. R. C. (2009). La integración de las Tecnologías de la información y comunicación (TIC) en el Área de Educación Física. *Hekademos: revista educativa digital*, (4), 45-56.

Salvador-Garcia, C., Maravé-Vivas, M., Chiva-Bartoll, Ó. & Ruiz-Montero, P. J. (2022). Aprendizaje-servicio físico-deportivas y educación física en contextos universitarios con diversidad cultural. *Utopía y Praxis Latinoamericana, 27*(96), 1-13.

Sánchez, J. A. J. (2020). David Álvarez Jiménez, Panem et circenses. Una historia de Roma a través del circo. *Pyrenae*, *51*(2), 214-218.

Sánchez, MDP, Martínez, OL, García, CF, & García, MRB (2003). Adaptation of the figurative test of the Torrance creative thinking test in a sample of students from the first educational levels. *Journal of Educational Research, 21* (1), 201-213.

Sanmartí, N. (2007). Hablar, leer y escribir para aprender ciencia. Universidad Autónoma de Barcelona. En: Fernández, P. (2007). La competencia en comunicación lingüística en las áreas del currículo. Colección Aulas de Verano. Madrid: MEC.

Santos-Pastor, M. L., Cañadas, L., Martínez-Muñoz, L. F., & García-Rico, L. (2020). Diseño y validación de una escala para evaluar el aprendizaje-servicio universitario en actividad física y deporte. *Educación XX1*, *23*(2), 67-93.

Santos-Pastor, M. L., Martínez-Muñoz, L. F., Garoz-Puerta, I., & García-Rico, L. (2021). La reflexión en el Aprendizaje-Servicio Universitario en Actividad Física y Deporte. Claves para el aprendizaje personal, académico y profesional. *Contextos Educativos. Revista de Educación*, (27), 9-29.

Santos-Pastor, M. L., Muñoz, L. F. M., & Cubero, H. A. (2017). Una experiencia inclusiva de aprendizaje-servicio en la naturaleza. *Cuadernos de pedagogía*, (479), 69-70.

Santos-Pastor, M. L., Muñoz, L. F. M., & Martín, L. C. (2018). Actividades físicas en el medio natural, aprendizaje-servicio y discapacidad intelectual. *Espiral. Cuadernos del Profesorado*, *11*(22), 52-60.

Sawyer, R. K. (2012). *The Science of Human Innovation: Explaining Creativity*. Oxford University Press.

Schafer, W., Swanson, G., Bené, N., & Newberry,G. (2001). Effects of teacher knowledge of rubrics on student achievement in four content areas. *Applied Measurement in Education, 14*(2), 151-170

Schiavio, A., & Van der Schyff, D. (2018). 4E music pedagogy and the principles of self-organization. *Behavioral Sciences, 8* (8), 72.

Shapiro, D. F. (2003). Facilitating holistic curriculum development. *Assessment & Evaluation in Higher Education, 28* (4), 423-434.

Shapiro, L. (2010). *Embodied cognition*. Routledge.

Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research*, *78*(1), 153-189.

Silalahi, T. F., & Hutauruk, A. F. (2020). The application of cooperative learning model during online learning in the pandemic period. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, *3*(3), 1683-1691.

Slavin, R. E. (1980). Cooperative learning. *Review of Educational Research*, *50*(2), 315-342.

Slavin, R. E. (1989). Research on cooperative learning: An international perspective. *Scandinavian Journal of Educational Research*, *33*(4), 231-243.

Smith, G. A. (2002). Place-based education: Learning to be where we are. *Phi delta kappan, 83* (8), 584-594.

Sobel, D. (2004). Place-based Education. The Orion Society.

Soto, C. Á., & Vargas, J. J. L. (2019). Cuerpo, corporeidad y educación: una mirada reflexiva desde la Educación Física. *Retos: nuevas tendencias en educación física, deporte y recreación*, (35), 413-421.

Sparkes, A. C., Martos-Garcia, D., & Maher, A. J. (2019). Me, Osteogenesis Imperfecta, and my classmates in physical education lessons: A case study of embodied pedagogy in action. *Sport, Education and Society*, *24*(4), 338-348.

Stacey, R. D., Griffin, D., & Shaw, P. (2000). *Complexity and Management: Fad or Radical Challenge to Systems Thinking?* Psychology Press.

Stenhouse, L. (1975). *An introduction to curriculum research and development*. Heinemann Educational.

Stott, A., & Neustaedter, C. (2013). Analysis of gamification in education. *Surrey, BC, Canada*, *8*(1), 36.

Strom, K. J. & Martin, A. D. (2017). *Becoming-Teacher: A Rhizomatic Look at First-Year Teaching*. Springer.

Strom, K. J. (2015). Teaching as assemblage: negotiating learning and practice in the first year of teaching. *Journal of Teacher Education, 66*(4), 321–333. https://doi.org/10.1177/0022487115589990

Strom, K. J., & Viesca, K. M. (2021). Towards a complex framework of teacher learning-practice. *Professional Development in Education, 47*(2-3), 209-224. https://doi.org/10.1080/19415257.2020.1827449

Suárez-Guerrero, C., & García Ruvalcaba, L. G. (2022). Presentación Ambientes híbridos de aprendizaje. *Sinéctica*, (58), 1-5.

Subrahmanian, R. (2005). Gender equality in education: Definitions and measurements. *International Journal of Educational Development, 25* (4), 395-407.

Talanquer, V. (2005). El químico intuitivo. *Educación Química*, *16*(4), 540-547.

Talbot, M. (2001). The case for physical education. *World Summit on Physical Education. Berlin, Germany: ICSSPE*, *2001*, 39-50.

Tapia, M. N. (2008). Calidad académica y responsabilidad social: el aprendizaje servicio como puente entre dos culturas universitarias. *Aprendizaje servicio y responsabilidad social de las universidades*, 27-56.

Tapia, MN (2008). Academic quality and social responsibility: service learning as a bridge between two university cultures. *Service Learning and Social Responsibility of Universities,* 27-56.

Tessier, J. T. (2009). Classroom debate format. *College Teaching*, *57*(3), 144-152.

Tinning, R. (1991). Teacher education pedagogy, dominant discourses and the process of problem setting. *Journal of Teaching in Physical Education, 11*, 1-20.

Tinning, R., & Glasby, T. (2002). Pedagogical work and the cult of the body: Considering the role of HPE in the context of the 'new public health'. *Sport, Education and Society, 7* (2), 109–119. https://doi.org/10.1080/1357332022000018814

Tolgfors, B. (2018). Different versions of assessment for learning in the subject of physical education. *Physical Education and Sport Pedagogy*, *23*(3), 311-327.

Topping, K. J. (2009). Peer assessment. *Theory into Practice, 48*(1), 20-27. https://doi.org/10.1080/00405840802577569.

Tordera, D. (2021). Gamificación para el aprendizaje de búsqueda en bases de datos de compuestos químicos. *Edunovatic2021*, 253.

Torrents, C., Balagué, N., Ric, Á., & Hristovski, R. (2021). The motor creativity paradox: Constraining to release degrees of freedom. *Psychology of Aesthetics, Creativity, and the Arts*, *15*(2), 340.

Tremblay, M., & Lloyd, M. (2010). Physical literacy measurement: The missing piece. *Physical and Health Education Journal*, *76*(1), 26-30.

Tromp, C., & Sternberg, R. J. (2022). How constraints impact creativity: An interaction paradigm. *Psychology of Aesthetics, Creativity, and the Arts*, 1-13.

Tumposky, N. R. (2004) The Debate Debate, The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 78(2), 52-56, https://doi.org/10.3200/TCHS.78.2.52-56

Valero-Matas, JA, Valero-Oteo, I., Coca, JR, & Laurencio Leyva, A. (2016). Creativity and education for the 21st century from a sociological perspective. *Journal of Political and Sociological Research, 15* (2), 201-222

Valverde-Esteve (In press). How can active methodologies taught through cooperative learning influence the social responsibility? An exploratory study from the nonlinear pedagogy lens. In Ortega-Sánchez & López-Padrón (coord). *Educación y Sociedad: claves interdisciplinares*. (pp. 1540-1550). Octaedro.

Valverde-Esteve (2019). Peer evaluation: A Practical Experience in Didactics of Physical Education. *Education and law review, 19*, 1-11.

Valverde, T., Fabregat, Ó. R., & Bartoll, O. C. (2019). El Aprendizaje Basado en Proyectos de las clases de Educación Física: La historia a través de los juegos: Roma y Grecia. In *Metodologías activas en Ciencias del deporte: VOL II* (pp. 289-302). Wanceulen.

Valverde, T., Lizandra, J. & Menescardi, C. (2019). Una experiencia innovadora: los contenidos de la asignatura de Biomecánica a través de la visualización de vídeos. En: *Investigación e innovación en la Enseñanza Superior: Nuevos contextos, nuevas ideas* (pp. 740-752). Octaedro.

Valverde, T., Salvador-García, C., Chiva-Bartoll, O.., & Gil-Gómez, J. (2021). Los modelos pedagógicos activos en la formación inicial docente: un enfoque no-lineal, transformador y sostenible. In *Igualdad y calidad educativa: oportunidades y desafíos de la enseñanza* (pp. 1903-1927). Dykinson.

Valverde-Esteve, T. (2021). Practical implications of the non-linear pedagogy in future physical Education Teachers Training during a body expression session: towards the edge of chaos (Implicaciones prácticas de la pedagogía no-lineal en la formación del Profesorado de Educación Física durante una sesión de expresión corporal: hacia el borde del caos. *Retos*, (40), 231-240.

Valverde-Esteve, T., Chiva-Bartoll, O., Salvador-García, C., & Maravé-Vivas, M. (2020). Effect of a Service-Learning Program on the Active Lifestyle of Children with Autism Spectrum Disorder: A Pilot Study. *Sustainability*, *12*(11), 4354.

Valverde-Esteve, T., Rozalén-Fabregat, Ó., & Chiva-Bartoll, Ó. (2019b). El Aprendizaje basado en proyectos en las clases de Educación Física. La historia a través de los juegos: Grecia y Roma. En: Ruiz-Montero, P.J. & Baena, A. *Metodologías Activas en Ciencias del Deporte Volumen II*. (pp.289-302). Wanceulen.

Valverde-Esteve, T., Salvador-Garcia, C., & Ruiz-Madrid, N. (2022). Teaching Physical Education through English: promoting pre-service teachers' effective personality through a learning-practice approach. En: Estrada, J.L., & Zayas, F. (2022). Training Teachers for Bilingual Education in Primary Schools. IGI Global (in press).

Valverde-Esteve, T., Salvador-García, C., Chiva-Bartoll, O., & Gil-Gómez, J. (2021). Los modelos pedagógicos activos en la formación inicial docente: un enfoque no-lineal, transformador y sostenible. In *Igualdad y calidad educativa: oportunidades y desafíos de la enseñanza* (pp. 1903-1927). Dykinson.

Valverde-Esteve, T., Salvador-Garcia, C., Gil-Gómez, J., & Maravé-Vivas, M. (2021). Sustainable Service-Learning in Physical Education Teacher Education: Examining Postural Control to Promote ASD Children's Well-Being. *International Journal of Environmental Research and Public Health*, *18*(10), 5216.

Valverde-Esteve, T., Salvador-García, C., Maravé-Vivas, M., & Menescardi, C. (2022). La representación de contenidos teóricos a través de la Expresión Corporal de forma activa, cooperativa y no-lineal. In: Educar para transformar: innovación pedagógica, calidad y TIC en contextos formativos (pp.972-981). Dykinson

Valverde-Esteve, T.; Tordera-Salvador, D. (2023). Fomento del pensamiento crítico y evaluación de la información desde la Pedagogía No Lineal a través de los debates. Dykinson. In press.

Velázquez Callado, C., Fraile Aranda, A., & López Pastor, V. M. (2014). Aprendizaje cooperativo en educación física. *Movimento*, *20*(1), 239-259.

Vernetta, M., López, J., & Delgado, M. A. (2010). Shared assessment in learning gymnastic skills in European higher education space. *European Journal of Human Movement*, *23*, 123-141.

Vernetta, M., López, J., & Delgado, M.A. (2009). La coevaluación en el aprendizaje de las habilidades gimnásticas, en el ámbito del espacio europeo universitario. *Motricidad. European Journal of Human Movement, 23*, 123-141.

Vicente, M. (1988). *Teoría pedagógica de la actividad física.* Gymnos.

Villabona, N., & Cenoz, J. (2022). The integration of content and language in CLIL: a challenge for content-driven and language-driven teachers. *Language, Culture and Curriculum*, *35*(1), 36-50.

Visser, E. L., Mazzoli, E., Hinkley, T., Lander, N. J., Utesch, T., & Barnett, L. M. (2020). Are children with higher self-reported wellbeing and perceived motor competence more physically active? A longitudinal study. *Journal of science and medicine in sport*, *23*(3), 270-275.

Vivo, M. L. M. (2008). La psicomotricidad en el primer curso de Educación Primaria. *Hekademos: revista educativa digital*, (1), 23-40.

Wagner, C.S., & Leydesdorff, L. (2005). Network structure, self-organization, and the growth of international collaboration in science. *Research Policy, 34* (10), 1608-1618.

Wang, Y., Nie, L., & Jian, H. (2023). Valuation and Analysis of Online Teaching Platforms in Post-pandemic Era. *International Journal of Information and Education Technology*, *13*(2), 257-265.

Wang, Y., Nie, L., & Jian, H. (2023). Valuation and Analysis of Online Teaching Platforms in Post-pandemic Era. *International Journal of Information and Education Technology*, *13*(2), 257-265.

Weiss, M.R. (2011) Teach the Children Well: A Holistic Approach to Developing Psychosocial and Behavioral Competencies Through Physical Education. *Quest, 63*(1), 55-65, DOI: 10.1080/00336297.2011.10483663

Weiss, M.R. (2011) Teach the Children Well: A Holistic Approach to Developing Psychosocial and Behavioral Competencies Through Physical Education. *Quest, 63*(1), 55-65, DOI: 10.1080/00336297.2011.10483663

Werbach, K., Hunter, D., & Dixon, W. (2012). *For the win: How game thinking can revolutionize your business* (Vol. 1). Philadelphia: Wharton digital press.

Whitehead, M. (2001). The concept of physical literacy. *European Journal of Physical Education*, *6*(2), 127-138.

Wilkinson, S. (2019). “Equity and inequality amidst curriculum reform.” In *Routledge Handbook of Physical Education Pedagogies*, edited by CD Ennis, 187-199. Routledge.

Williams, A.M., Davids, K., & Williams, J.G.P. (1999). *Visual Perception and Action in Sport*. Taylor & Francis.

Wilson, M. (2002). Six views of embodied cognition. *Psychonomic bulletin & review*, *9*(4), 625-636.

Winans-Solis, J. (2014). Reclaiming power and identity: Marginalized students' experiences of service-learning. *Equity & Excellence in Education, 47* (4), 604–621. https://doi.org/10.1080/10665684.2014.959267

Winans-Solis, J. (2014). Reclaiming power and identity: Marginalized students' experiences of service-learning. *Equity & Excellence in Education, 47* (4), 604–621. https://doi.org/10.1080/10665684.2014.959267

Wreen, M. (2015). Creativity. *Philosophia, 43,* 891–913.

Wright, E.M., Griffes, K., & Gould, D.R. (2017). A qualitative examination of adolescent girls' sport participation in a low-income, urban environment. *Women in Sport and Physical Activity Journal, 25* (2), 77-88. https://doi.org/10.1123/wspaj.2016-0002 .

Zagalaz, M.L. (2001). *Corrientes y tendencias de la Educación Física*. Inde.

Zavertnik, J. E., Huff, T. A., & Munro, C. L. (2010). Innovative approach to teaching communication skills to nursing students. *Journal of Nursing Education*, *49*(2), 65-71.

Zimmerman, T.S., Krafchick, J.L., & Aberle, J.T. (2009). A university service-learning assignment. *Education, Citizenship, and Social Justice, 4* (3), 195–210.

ANNEXES

ANNEX I. BIBLIOGRAPHICAL REFERENCES FOR THE COURSE GUIDE FOR DIDACTICS OF PHYSICAL EDUCATION IN PRIMARY TEACHING

Basic references

Álvarez de Sotomayor, ID, & Varela, C. (2022). Didactic programming: Basic Elements. Universitas Publishing House.

Blázquez, D. (Ed.). (2016). Teaching methods in physical education. Barcelona: Inde.

Blázquez, D. (2017). How to evaluate physical education well. Barcelona: Inde.

Contreras, OR & Gutiérrez, D. (2021). Project-based learning in physical education. Barcelona: Inde.

García-González, L., Abós Catalán, Á., & Sevil-Serrano, J. (2020). Teaching action in physical education and physical-sports activities: theory based on scientific evidence (Vol. 291). Zaragoza: Presses of the University of Zaragoza.

Kirk, D., MacDonald, D., & Osullivan, M. (2006). The Handbook of Physical Education. London: SAGE Publications Ltd.

Lleixà, T. and Sebastiani, EM (coords.) (2016). Key Competencies and Physical Education. Bercelona: Inde.

López Pastor, VM (coord). (2014). Evaluation in physical education: review of traditional models and proposal of an alternative. Buenos Aires: Miño and Dávila.

Lorente, E., & Martos, D. (2018). Physical Education and critical pedagogy: Proposals for personal and social transformation. Lleida: University of Lleida.

Navarro, A. (2012). Teaching manual for Physical Education in Primary Education. Valencia: Publications Universitat de València.

Pérez-Pueyo, A., Hortigüela-Alcalá, D., Fernández-Río, J., Calderón, A., García-López, LM et al. (2021). Pedagogical models in physical education: what, how, why and for what. León: University of León. Publications Service.

Additional references

Arnold, P.J. (1991). *Physical Education, movement and curriculum* . Madrid: Morata.

Baena-Extremera, A., & Granero-Gallegos, A. (2011). Contribution of physical activities in the natural environment to the achievement of basic competencies. Trances, 3(5), 609-632.

Barrios J., López-Pastor, VM, Pedraza, MA, Ruano, C., and Sáez, J. (2016). Programming by domains of motor action in Physical Education. Buenos Aires: Miño y Dávila Editores.

Bermejo-Martínez, G., Sevil-Serrano, J., García-González, L., and Generelo, E., & (2019). The role of families in promoting healthy habits. Zaragoza: University of Zaragoza.

Blázquez, D. (2013). Ten teaching skills to be a better Physical Education teacher: didactic class management. Barcelona: Inde.

Chow, J.Y., Davids, K., Button, C., & Renshaw, I. (2016). Nonlinear Pedagogy in Skill Acquisition. An Introduction. New York, NY: Routledge.

Gambau, V. (2015). The current problems of physical education and school sports in Spain. Spanish Journal of Physical Education and Sports, 411, 53-69.

Garagordobil, M. (2004). Cooperative and creative games for children ages 10 to 12. Madrid: Pyramid.

Del Valle, S., García, MJ (2007). How to program in Physical Education step by step. Barcelona: Inde.

Devís Devís, J and Peiró Velert, C. (1992). New curricular perspectives of Physical Education: health and modified games. Barcelona. INDE.

Fernández-Río, J., Calderón, A., Alcalá, DH, Pérez-Pueyo, A., & Cebamanos, MA (2016).

Pedagogical models in physical education: theoretical-practical considerations for teachers. Spanish Magazine of Physical Education and Sports, (413), 55-75.

García-González, L. (2021). How to motivate in physical education: Practical applications for teachers based on scientific evidence. Zaragoza: Publications Service. Zaragoza's University.

Haywood, K.M., & Getchell, N. (2014). Life Span Motor Development. Champaign: Human Kinetics.

López-Pastor, VM, Pedraza, MA, Ruano, C., Sáez, J. (2017). Physical Education and domains of motor action. Buenos Aires: Miño y Dávila Editores.

Méndez-Giménez, A. (2003). New recreational proposals for the curricular development of Physical Education. Barcelona: Paidotribo Publishing.

Méndez-Giménez, A. (2014). Teaching models in Physical Education. Madrid: Group 5.

Molina-García, J. (2016). Recommendations for practicing physical activity and contexts of
intervention at school age: the role of the educational center. In Gadivia, V. (Coordinator), The eight areas of Health Education in School (pp.113-127). Valencia: Tirant Humanities.

Mosston, M., & Ashworth, S. (2008). Teaching Physical Education. The Spectrum Institute for Teaching and Learning. London: Pearson Education.

Rodríguez-García, PL (2006). Physical education and health in primary school: towards a meaningful and autonomous body education. Barcelona: Inde.

Pérez-Ramírez, C. (1993). Historical evolution of Physical Education. Notes. Physical education and sports, 3(33), 24-38.

Reina, R., Sierra, B., García-Gómez, B., Fernández-Pacheco, Y., Hemmelmayr, I., García-Vaquero, MP, ... & Roldán, A. (2016). Includes-T: Physical Education and Inclusive Sports. Elche: Limencop SL.

Rodríguez García, PL (2006). Physical education and health in primary school: towards a meaningful and autonomous body education. Bercelona: Inde.

Ríos, M. (2017). 565 Sports initiation games and tasks adapted to people with disabilities disability. Barcelona: Paidotribo.

Sáenz-López, P. (1999). The importance of Physical Education in Primary. Notes, Physical Education and Sports,57, 20-31.

Sicily, Á. and Delgado, M. (2002). Physical education and teaching styles. Barcelona: Inde.

Soca-rel (2021). Physical Education as a tool for social transformation. Critical pretexts. Barcelona: Inde.

Tena, I. (2018). Body expression through dance creation: process of developing a didactic unit in Early Childhood and Primary Education. Zaragoza: Zaragoza University Presses.

Whitehead, M. (2010). Physical Literacy. Throughout the life course. New York, NY: Routledge.

ANNEX II: ASSESSMENT RUBRIC FOR THE COURSE'S WRITTEN GROUP ASSIGNMENT[10]

NAME OF THE GROUP:	**PROJECT TOPIC:**		**Marking date:**	
ITEMS	**DESCRIPTOR**	**3**	**2**	**1**
Justification	Appropriate justification of the topic, philosophy and main objectives of the teaching unit (TU)			
Contextualization	It indicates the stage and age which the TU is aimed at			
Theoretical framework	Brief theoretical introduction to demonstrate a prior search for information. Content must be correct and well-referenced.			
PROJECT CONTENT (50% of the mark)				
Internal coherence of the TU*	Adaptation and coherence between the objectives, contents, competencies and assessment criteria.			
Timing	Degree of clarity in the sequencing of the project.			
Methods	Appropriate and consistent methodological approach.			
Development of the sessions*	The proposed sessions are correct, consistent with the content block and the educational stage.			
Content of the activities	Specificity and quality of the proposed activities. Quality of the teaching materials and resources.			
DU assessment*	Assessment and grading method of the TU. Specificity, coherence with the proposal and use of instruments.			
At. to diversity	Attention to diversity.			
Transversal elements	The TU includes the development of contents, ICT, entrepreneurship and/or civic education			
WORK ASSESSMENT (10% of the final mark)				
Self-assessment	Quality of the self-assessment: working process, level of satisfaction with the outcome, elements highlighted, and proposals for improvement.			
FORMAT (20% of the mark)				
Size*	20 pages, DIN A4 format, double-spaced, Arial, 12 points. The annexes must not exceed 10 pages.			
Grammar and spelling	Spelling and quality of the language used.			
% plagiarism*	To pass, this should not exceed 20%.			
References	Reference format (not missing and well written).			

[10] Created by the course professors.

ANNEX III: ASSESSMENT FORM FOR THE THEORETICAL PRESENTATION OF THE GROUP ASSIGNMENT[11]

[11] Created by the course professors.

NAME OF THE ASSESSING GROUP		ASSESSED GROUP				Date of the presentation:	
ITEMS	**4**		**3**		**2**		**1**
Context	The content of the TU is perfectly understandable		The content of the TU IS quite clear		There are doubts about the content of the TU		The general content of the TU is not understood	
Organization of the group	The group is very well organized, and the presentation and activities are easy to understand		The presentation is well organized with some typical problems, but the activities work		Difficulties in organizing the presentation and/or activities		There is a lack of organization in the presentation	
Pace	The presentation is fluid and with a very well-paced		The presentation works and well-paced		The presentation works but does not flow correctly		The proposed presentation does not work	
Quality of the activities	The activities explained are remarkable for their quality		The activities are good		The activities could be improved		The activities do not meet the minimum requirements	
Suitability of the proposal for the topic and the primary curriculum	The proposal is clearly linked to the primary curriculum		The proposal largely fulfils the primary curriculum		Generally, the proposal is relevant the primary curriculum		The proposal does not correspond to the primary curriculum	
Attention to Special Needs	Measures to attend to diversity are present and correct		Measures to attend to diversity are present but they can be improved		Measures to attend to diversity present but they are incorrect		Measures for attention to diversity are not present	
Adaptation to unforeseen events	The group is very capable of overcoming unforeseen events		The group is able to deal with unforeseen events		The group is able to deal with unforeseen events with some difficulties		The class was chaotic due to unforeseen events	
Originality of the proposal	The proposal stands out for its originality		The proposal is correct, without standing out for its originality		The proposal is rather unoriginal		The proposal is not original or well-oriented	
FINAL SCORE								
SCORE	Between 32 and 29: **Excellent** Between 28 and 23: **Good** Between 22 and 16: **Pass** Under 15: **Fail**							