

Volume 10 issue 1; 2025

Ciencia y Deporte



Gamification as an active learning methodology for school Physical Education

[Gamificación como metodología activa de aprendizaje para Educación Física escolar]

[Gamificação como metodologia ativa de aprendizagem para Educação Física escolar]

Luis Alfredo Añazco Martínez^{1*} 

¹Arturo Prat University. Faculty of Human Sciences. Iquique, Chile.

*Corresponding author: lanazco@unap.cl

Received: 23/06/2024

Approved: 07/02/2025

Abstract

In the educational field, competency-based teaching requires active methodologies to be implemented in students, allowing for the transfer of knowledge to the real world. To this end, gamification is a teaching strategy that increases student interest based on game situations in non-playful contexts. Thus, there are different school experiences and Physical Education subject experiences that demonstrate a high appreciation for the use

e288

of gamification, representing an increase in the motivation of participants, among other benefits. However, it would be important to learn about interdisciplinary experiences with other school subjects through collaborative work.

Keywords: gamification, Active methodologies, Physical Education, School, students

Resumen

En el ámbito educativo, la enseñanza basada en competencias requiere de metodologías activas para implementar en el alumnado, permitiendo la transferencia del conocimiento al ámbito real. Para ello, la gamificación es una estrategia de enseñanza que permite aumentar el interés de los estudiantes basado en situaciones de juego en contextos no lúdicos. Es así como existen distintas experiencias escolares y de la asignatura de Educación Física que demuestran una alta valoración del uso de la gamificación, representando un aumento en la motivación de los participantes, entre otros beneficios. Sin embargo, sería importante poder conocer experiencias de forma interdisciplinar con otras materias escolares por medio del trabajo colaborativo.

Palabras clave: gamificación, metodologías activas, Educación Física, escuela, estudiantes

Resumo

No campo educacional, o ensino por competências requer metodologias ativas para implementar nos alunos, permitindo a transferência de conhecimentos para o campo real. Para isso, a Gamificação é uma estratégia de ensino que permite aumentar o interesse dos alunos com base em situações de jogo em contextos não lúdicos. É assim que existem diferentes experiências escolares e da disciplina de Educação Física que demonstram uma alta valorização do uso da Gamificação, representando um aumento na motivação dos participantes entre outros benefícios. Contudo, seria importante poder

conhecer experiências de forma interdisciplinar com outras disciplinas escolares através do trabalho colaborativo.

Palavras Chave: gamificação, metodologias ativas, Educação Física, escola, estudantes

Introduction

Traditionally, in the educational field, changes related to innovation and educational improvements have been implemented, where students have increasingly played a leading role in the acquisition of learning. For this, it is necessary to incorporate new active teaching methodologies that allow acting in response to the requirements that students need in a society of constant changes and access to immediate information (Sánchez, 2015).

Regarding the use of active methodologies, there is the concept of gamification, which is generally associated with play and serves as a tool that allows motivation among students, and in the case of the Physical Education subject, it has the transversal purpose of improving participation in physical activities. In this sense, gamification is related to the incorporation of game elements in non-playful situations in order to motivate and generate commitment with the students (García Gaibor, 2023). Thus, this game methodology is seen as an excellent means to increase concentration, effort, and motivation based on the recognition of shared educational potential through activities of a playful nature (Castillo *et al.*, 2022). Therefore, this methodological strategy is very useful in the educational field, especially as a support resource for teachers that allows them to seek flexibility in student learning, trying to explore ways to build meaningful learning (Sevilla-Sánchez *et al.*, 2023).

Among the functions that contribute to the functions and uses of gamification is the use of mobile devices, blogs, and various educational resources that allow monitoring learning and contributions to the subject of Physical Education, whether from a motivational or functional point of view in its implementation (Victoria-González, 2020). On the other hand, results of gamification can be found that are related to increased

motivation in students and other studies that indicate that it also helps improve academic performance.

In this way, in the Physical Education subject, we find results where it is evident that the use of gamification helped to obtain significant improvements in the motor and cognitive learning of students, which could be a useful tool to increase learning without prejudice to their levels of motivation (León-Díaz *et al.*, 2023). Gamification is also beneficial for academic performance without the need for intrinsic motivation to influence it (Ferriz-Valero *et al.*, 2020).

On the other hand, from the perspective of motivation, gamification has a positive impact on students, enhancing the internal and external psychology of the game as a basic element of the process, managing to be a motivational strategy for educational purposes (Alarte-Hernández and Arias-Estero, 2021).

Therefore, using the active methodology using gamification is an excellent alternative to work in Physical Education classes that are challenging and innovative and that allow students to participate actively during the development of the session. However, it is necessary to consider that for the use of innovative elements, there must be a balance between teaching practice and the aspects of innovation that need to be implemented (Pérez-Pueyo and Hortiguela-Alcalá, 2020).

Development

Competency-based education and active methodology

In recent times, the concept of competencies has increasingly approached the school environment in the various subjects, and in the case of Physical Education, it has been oriented towards the acquisition of a bodily culture, the development of motor skills, as well as contact with the cultural, physical, and social environment (Figueras *et al.*, 2016). In this sense, the competencies outlined in the curriculum require that teachers comply with the teaching-learning process, adapting structures and teaching methods of a practical nature to contribute to the competencies that allow contributing to the

application of learning for the resolution of complex situations in the real world (Buscá *et al.*, 2016).

Thus, the change from an educational model based on traditional teaching by objectives to the cultural change based on competencies that is oriented to the transfer of knowledge in the real world requires active methodologies result of the new challenges and educational requirements that come from society (Rebollo-Quíntela and Losada-Puente, 2021). In relation to the competency-based methodology, this will help students manage and apply knowledge in real and changing situations, resulting in the granting of autonomy and responsibility, with the student being the center of the teaching-learning process (Zapatero-Ayuso *et al.*, 2018).

In this way, active methodologies allow the teacher to assume a task effectively, and on the part of the students, it allows the achievement of learning in a meaningful way, allowing them to be active creators of their new knowledge (Gálvez, 2013). Furthermore, León-Guerrero and Crisol-Moya (2011) mention that the active methodology is based mainly on the role that the student plays, being responsible for their own learning in order to have their own autonomy in the acquisition of learning and with this the development of skills necessary for working life. Meanwhile, Fernández March (2006) states that these methodologies integrate student participation, obtaining greater responsibility and involvement in their task and therefore obtaining greater formability in the process with significant and lasting results in their acquired learning.

Use of ICTs

In the educational context, the use of educational technologies is increasingly prominent in society, which means that certain applications appear and others disappear according to the constant innovations that occur in the knowledge society and their contribution to the educational field (Ortega *et al.*, 2024; Rius *et al.*, 2023).

Thus, the use of ICTs is focused on the student through the creation of suitable environments with a set of resources that allows for personalized learning and immediate access to content (González-Fernández, 2018). In relation to this, from the perspective of teachers, it has also allowed for a greater acquisition of programs and

technological tools that enable teaching development in the various methodologies that can be applied to students (Garate Carrillo and Cordero Arroyo, 2019).

In this context, in the digital age, teachers are no longer limited to working in virtual environments, but use various digital platforms as a means of support to disseminate learning resources as well as share content from the classes the teacher teaches (Quintero-González *et al.*, 2018). In relation to this, Menescardi *et al.* (2021) mentions that the technological competence of teachers is still considered to be at a basic user level in the use of technological resources such as word processors, internet browsing, and other functionalities that are still poorly integrated in the teaching staff.

Therefore, in the subject of Physical Education, several educational resources can be used, such as presentations, use of WebQuests, Socrative, blogs, videos, use of mobile applications, and other multimedia resources that allow the acquisition of learning for all students, with the aim of achieving a more equitable quality of education in society (LópezBueno *et al.*, 2024; Navarrete González, 2010). Under this scenario, access to digital technologies has allowed for the expansion of learning possibilities and the creation of spaces that allow for the use of various digital games as an educational resource for teachers (Gross, 2019).

Gamification as an educational resource and educational experiences

Gamification is a concept that has increasingly gained prominence and importance in classrooms, being considered a motivating and innovative learning strategy and a resource that allows teachers to capture students' attention in a more playful way (Martínez-Hita and Martínez-Hita, 2017).

Thus, in the subject of Physical Education, the use of gamification helps to foster students' interest in learning, achieving greater performance and increasing commitment to the development of physical activity practice (Escarvajal-Rodríguez and Martín-Acosta, 2019).

In this way, gamification allows the application of strategies in game mode, where participants must be able to make decisions, take on challenges, and receive feedback in an educational environment based on fun as learning (Llorens-Largo *et al.*, 2016). In this sense, gamification is related to the application of game strategies in educational contexts outside of games, with the aim that participants adopt certain behaviors that allow increasing intrinsic motivation (Pérez-Manzano and Almela-Baeza., 2018). For their part, Quintas *et al.* (2020) points out that gamification is appropriate in the educational field when it is used with educational objectives and that it does not only involve reproducing the game resource without obtaining a pedagogical reflection.

Among the gamification experiences is the study by Sáez and Domínguez (2014), who use narratives and social interaction relationships as didactics through cooperation mechanics between participants and basing the components on achievements and team formation. There is also the experience of Cantador (2016) who applies gamification through problem-based and cooperative learning, establishing progression between the dynamics and having as components the mechanics of cooperation, competition and reward through badges, rankings and virtual gifts. Another study, related to the use of gamification, uses digital badges in secondary education and through activities related to emotions and progression, implementing reward and competition mechanics as components for obtaining achievements and badges, demonstrating student motivation as a result (Palazón-Herrera, 2015).

Regarding gamification experiences in Physical Education, there is one implemented in Secondary Education, called *La casa EF papel* (The PE Paper House), whose results demonstrated the importance of teamwork and the achievement of group objectives, significantly improving motivation in the participants (Flores *et al.*, 2023). On the other hand, we found an experience that lasted 15 weeks and three consecutive units were designed, showing in the results a significant increase in intrinsic motivation, with the main responses from the participants being enjoyment, friends and learning (Fernández-Rio *et al.*, 2020).

In relation to these results, they coincide with the findings found by Añazco (2022), who in his results mentions that one of the main purposes of the subject of Physical Education is related to the enjoyment of physical activity. On the other hand, Sotos-Martinez *et al.* (2022) in their study analyzed the motivation of High School students during a unit of 8 sessions, obtaining as results an increase in intrinsic motivation and therefore a decrease in demotivation in High School students.

Another investigation, which aimed to analyze the effects on autonomy, competence, motivation and boredom in Physical Education students, obtained as results the achievement of all the dimensions mentioned and evidencing a slight improvement in academic performance, but not in a significant way (Segura *et al.*, 2020).

Similarly, the study by Rodríguez-Martín *et al.* (2022) aimed to assess the effects of a didactic program on anxiety about failure in Physical Education, in which 143 students from 5th-6th grade elementary school participated. The results obtained positive aspects regarding overcoming challenges, cooperative work, personal improvement, and some curricular aspects.

Conclusions

Competency-based education allows students to acquire skills, abilities, and attitudes that enable them to transfer knowledge to the real world, according to the needs of today's society. This competency-based model requires the use of active methodologies that focus on the student, making them an active participant in their learning. Furthermore, the teacher needs to use methodologies that allow the student to increase interest in the student body, and in this way, be able to face the current demands of a society that increasingly uses digital technologies.

In light of this, Gamification is part of an active methodology that allows the use of games in educational contexts that are not games, resulting in an increase in motivation and an improvement in academic performance. In relation to this, there are positive

experiences regarding the use of gamification in primary and secondary education that demonstrate a high appreciation for its application.

Bibliographic References

Alarte-Hernández, A. & Arias-Estero, J. (2021). Experiencia práctica empleando la gamificación y las Tics en la clase de educación física en educación secundaria. *Athlos: Revista internacional de ciencias sociales de la actividad física, el juego y el deporte*, (24), 34-62. <https://dialnet.unirioja.es/servlet/articulo?codigo=8043481>

Añazco-Martínez, L. (2022). La clase de Educación Física en el contexto escolar chileno: significados desde la percepción de alumnado del sur de Chile. *Revista INTEREDU*, 2(7), 52-83. <https://doi.org/10.32735/S2735-652320220007123>

Buscá, F., Lleixá, T., Coral, J., y Gallardo, S. (2016). La programación por competencias en educación física: retos y problemas para su implantación en la escuela. *REMIE: Multidisciplinary Journal of Educational Research*, 6(3), 292-317. <https://dialnet.unirioja.es/servlet/articulo?codigo=5676354>

Cantador, I. (2016). La competición como mecánica de gamificación en el aula: una experiencia aplicando aprendizaje basado en problemas y aprendizaje cooperativo. In: Contreras Espinosa, R, Eguia, J. (Ed.). *Gamificación en aulas universitarias*. Bellaterra: Institut de la Comunicació: Universitat Autònoma de Barcelona, 68-97. <https://dialnet.unirioja.es/servlet/articulo?codigo=8671038>

Castillo, M., Escobar, M., Barragán, R., y Cárdenas, M. (2022). La gamificación como herramienta metodológica en la enseñanza. *Revista polo del conocimiento*.7(1), 686-701. <http://dx.doi.org/10.23857/pc.v7i1.3503>

- Escaravajal, J., y Martín-Acosta, F (2019). Análisis bibliográfico de la gamificación en Educación Física. *riccafd: Revista Iberoamericana de Ciencias de la Actividad Física y el Deporte*, 8(1), 97-109. <https://doi.org/10.24310/riccafd.2019.v8i.5770>
- Fernández-March, A. (2006). Metodologías activas para la formación de competencias. *Educatio siglo XXI*, 24, 35-56. <https://revistas.um.es/educatio/article/download/152/135>
- Fernández-Río, J., de las Heras, E., González, T., Trillo, V., & Palomares, J. (2020). Gamification and physical education. Viability and preliminary views from students and teachers. *Physical Education and Sport Pedagogy*, 25(5): 509-524. <https://doi.org/10.1080/17408989.2020.1743253>
- Ferriz-Valero, A., Østerlie, O., Martínez, S. G., & García-Jaén, M. (2020) Gamification in physical education: Evaluation of impact on motivation and academic performance within higher education. *International Journal of Environmental Research and Public Health*, 17(12), 1-16. <https://doi.org/10.3390/ijerph17124465>
- Flores-Aguilar, G., Iniesta-Pizarro, M. & Fernández-Río, J. (2023) “PE Money Heist”: Gamification, Motivational Regulations and Qualifications in Physical Education. *Apunts Educación Física y Deportes*, 151, 36-48. [https://doi.org/10.5672/apunts.2014-0983.es.\(2023/1\).151.04](https://doi.org/10.5672/apunts.2014-0983.es.(2023/1).151.04)
- Gálvez, E. (2013). Metodología activa. Favoreciendo los aprendizajes. Santillana.
- Gárate Carrillo, M., y Cordero Arroyo, G. (2019). Apuntes para caracterizar la formación continua en línea de docentes. *Revista de estudios y experiencias en educación*, 18(36), 209-221. <https://dx.doi.org/10.21703/rexe.20191836garate10>
- García Gaibor, J. (2023). La gamificación para la enseñanza de la educación física: revisión sistemática. *GADE: Revista Científica*, 3(2), 51-73. <https://dialnet.unirioja.es/servlet/articulo?codigo=8946757>

- González Fernández, M. (2018). Percepción del desempeño docente-estudiante en la modalidad mixta desde una mirada ecosistémica. *RIDE Revista Iberoamericana Para La Investigación Y El Desarrollo Educativo*, 8(16), 370 - 393.
<https://doi.org/10.23913/ride.v8i16.346>
- Gros, B. (2019). La innovación en los entornos y materiales de aprendizaje. En M. Martínez y A. Jolouch (Eds.), *Las paradojas de la innovación educativa* (pp. 175-196). Horsori Editorial y Cuadernos de Educación.
https://books.google.com.cu/books/about/Las_paradojas_de_la_innovaci%C3%B3n_educativ.html?id=BBUqyAEACAAJ&source=kp_book_description&redir_esc=y
- León Díaz, Ó., Martínez Muñoz, L., y Santos Pastor, M. (2023). Metodologías activas en la Educación Física. Una mirada desde la realidad práctica. *Retos*, 48: 647-656.
<https://doi.org/10.47197/retos.v48.96661>
- León-Guerrero, M. J. y Crisol-Moya, E. (2011). Diseño de cuestionarios (OPPUMAUGR y OPEUMAUGR): la opinión y la percepción del profesorado y de los estudiantes sobre el uso de las metodologías activas en la universidad. Profesorado. *Revista de Currículum y Formación de Profesorado*, 15(2), 271-298.
<https://www.redalyc.org/articulo.oa?id=56719129018>
- Llorens-Largo, F., Gallego-Durán, F. J., Villagrà-Arnedo, C., Compañ-Rosique, P., Satorre-Cuerda, R., y Molina-Carmona, R. (2016). Gamificación del Proceso de Aprendizaje: Lecciones Aprendidas. *VAEP-RITA*, 4(1), 25-32.
<https://core.ac.uk/download/pdf/78635752.pdf>
- López Bueno, H., Val, S., y Gaeta González, M. L. (2023). Importancia de la Digitalización Docente para una Educación Inclusiva, Crítica y Equitativa. *Revista Internacional De Educación Para La Justicia Social*, 12(1), 211-227.
<https://doi.org/10.15366/riejs2023.12.1.012>

- Martínez-Hita, F. y Martínez-Hita, M. (2017). La gamificación en la clase de Educación Física. *Lecturas: Educación Física y Deportes*, 22 (233), 1-7. <https://revistamentor.ec/index.php/mentor/article/view/6800>
- Menescardi, C., Suárez-Guerrero, C., y Lizandra, J. (2021). Training Physical Education Teachers in the Use of Technological Applications. *Apunts. Educación Física y Deportes*, 144, 33-43. [https://doi.org/10.5672/apunts.2014-0983.es.\(2021/2\).144.05](https://doi.org/10.5672/apunts.2014-0983.es.(2021/2).144.05)
- Navarrete González, R. (2010). La inclusión de las nuevas tecnologías en la programación del área de Educación Física. *EmásF: revista digital de educación física*, (4), 53-65. <https://dialnet.unirioja.es/servlet/articulo?codigo=3233222>
- Ortega, E., Martín, B., López-Lambas, M., & Jorquera, C. (2024). Assessment of a service-learning project experience in mobility and spatial data. *Research in Education and Learning Innovation Archives*, 32, 57-74. doi: <http://dx.doi.org/10.7203/realia.32.27708>
- Palazón-Herrera, J. (2015) Motivación del alumnado de educación secundaria a través del uso de insignias digitales. *Opción*, 31, 1059-1079. <https://www.redalyc.org/pdf/310/31043005058.pdf>
- Pérez-Manzano, A., y Almela-Baeza, J. (2018). Gamification and transmedia for scientific promotion and for encouraging scientific careers in adolescents. *Comunicar*, 55, 93-103. <https://doi.org/10.3916/C55-2018-09>
- Pérez-Pueyo, A. y Hortiguera-Alcalá, D. (2020) ¿Y si toda la innovación no es positiva en Educación Física?: Reflexiones y consideraciones prácticas. *Retos: nuevas tendencias en educación física, deporte y recreación*, (37), 579-587. <https://doi.org/10.47197/retos.v37i37.74176>
- Quintas, A., Bustamante, J C., Pradas, F., & Castellar, C. (2020). Psychological effects of gamified didactics with exergames in Physical Education at primary schools:

Results from a natural experiment. *Computers & Education*, 152, 103874.
<https://doi.org/10.1016/j.compedu.2020.103874>

Quintero González, L. E., Jiménez, F., y Area Moreira, M. (2018). Más allá del libro de texto. La gamificación mediada con TIC como alternativa de innovación en Educación Física. *Retos*, 34, 343–348. <https://doi.org/10.47197/retos.v0i34.65514>

Rebollo-Quintela, N. & Losada-Puente, L. (2021). Modelo competencial del maestro en educación infantil. *Revista Electrónica Interuniversitaria de Formación del Profesorado*, 24(3), 115-132.

Rius, J. B., Pérez González, M., Arderiu Antonell, M., & Rillo-Albert, A. (2023). Formación docente en educación física: creación de un repositorio de unidades didácticas. *Retos*, 49, 414–426. <https://doi.org/10.47197/retos.v49.98114>

Rodríguez Martín, B., Flores Aguilar, G., & Fernández Río, J. (2022). Ansiedad ante el fracaso en educación física ¿puede la gamificación promover cambios en las alumnas de primaria? *Retos*, 44, 739–748. <https://doi.org/10.47197/retos.v43i0.90864>

Sáez, J., y Domínguez, C. (2014) Integración pedagógica de la aplicación minecraft edu en educación primaria: un estudio de caso. *Revista de Medios y Educación*, 45,95-110.

Sánchez, F. (2015) Gamificación. *Education in the Knowledge Society (EKS)*. 16(2), 13–15. <https://doi.org/10.14201/eks20151621315>

Segura, A., Fuentes, A., Parra, M. E., y López-Belmonte, J. (2020). Effects on personal factors through Flipped Learning and Gamification as combined methodologies in secondary education. *Frontiers in Psychology*, 11, 1103. <https://doi.org/10.3389/fpsyg.2020.01103>

Sevilla-Sánchez, M., Dopico-Calvo, X., Morales, J., Iglesias-Soler, E., Fariñas, J. y Carballeira, E. (2023) La gamificación en educación física: efectos sobre la

motivación y el aprendizaje. *Retos*, 47 87-95.
<https://doi.org/10.47197/retos.v47.94686>

Sotos-Martínez, VJ, Ferriz-Valero, A., García-Martínez, S., & Tortosa-Martínez, J. (2022). Los efectos de la gamificación en la motivación y las necesidades psicológicas básicas de los estudiantes de educación física de secundaria. *Pedagogía de la Educación Física y el Deporte*, 29 (2), 160-176.
<https://doi.org/10.1080/17408989.2022.2039611>

Victoria-González, C. (2020). Herramientas TIC para la gamificación en Educación Física. *Edutec, Revista Electrónica De Tecnología Educativa*, (71), 67-83.
<https://doi.org/10.21556/edutec.2020.71.1453>

Zapatero-Ayuso, J., González- Rivera, M., y Campos-Izquierdo, A. (2018). Consolidación de las metodologías activas en educación física en las escuelas de enseñanza secundaria. *Movimiento*, 24(2), 509-526. <https://doi.org/10.22456/1982-8918.70291>

Conflicto de intereses:

Los autores declaran no tener conflictos de intereses.

Contribución de los autores:

Los autores han participado en la redacción del trabajo y análisis de los documentos.



Esta obra está bajo una Licencia Creative Commons Reconocimiento-No Comercial Compartir
igual 4.0 Internacional

Copyright (c) 2025 Luis Alfredo Añazco Martínez