

## ORIGINAL RESEARCH ARTICLE

# Gamification as a means to improve teaching/learning process

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### ABSTRACT

Teacher training, particularly in-service training, is among the factors that can influence the success or failure of the teaching and learning process. Among the necessary skills that teachers must have and transmit to their students are life skills, i.e., a set of social, cognitive, and personal skills that can be learned, developed, and made transversal in every area of one's life and in every learning context. Through 'Learning through Play', it is possible to develop social and cognitive skills, mature emotionally, and gain the self-confidence needed to engage in new experiences and face everyday challenges. From this perspective, gamification can be a useful means and added value for teachers to train, engage, and motivate students.

**Keywords:** inclusive education; gamification; teaching

## 1. Introduction

The deep relationship between teaching quality and learning success highlights the value of continuous teacher training, which must be recognized and understood as fundamental from a quality school perspective.

In fact, a teacher's training does not end with the beginning of his or her teaching career, as the enrichment of his or her knowledge, experience, and skills, as well as continuous updates, are the basis of his or her professional growth<sup>[1]</sup>. Supporting the development and continuing professional development of teachers with a view to lifelong learning and improvement means contributing to raising the quality of schooling and, consequently, the quality of life of those who attend and learn. Continuing teacher education is recognized as "an opportunity for effective professional development and growth and for renewed social credibility as a contribution to innovation and qualification of the education system" (L. 107/2015). The institutions recognized the need to establish effective policies to improve education systems by prioritizing lifelong and continuous learning. As far as Italy is concerned, in-service teacher training is defined by Law 107 of 2015 as mandatory, permanent, and structural, as well as a valuable support to the educational approach with pupils. It is evident that the teaching and educational interventions of teachers have a strong impact on students, being fully embedded in the competence development process. This requires constant updating and improvement, not only in content but also in teaching methods and strategies<sup>[2]</sup>. Within the school, the need to develop pedagogical and teaching skills is seen from the perspective of continuous and meaningful learning<sup>[3]</sup>. Current legislation in Italy defines continuous teacher training as a tool to foster the development of theoretical,

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methodological, and applicative competences with reference to teaching action, encouraging meaningful learning and conscious, concrete, and effective actions<sup>[4]</sup>. Ongoing teacher training contributes to the promotion of a didactics that aims to be both interdisciplinary and innovative, placing the learner at the center, who, together with the teacher, has an active role. A didactician therefore knows how to use the different and numerous tools available for the acquisition of knowledge and key competences<sup>[3]</sup>.

Similarly to the development of technologies and the change in society, education has also moved forward in recent years, developing innovative methodologies, including gamification, which expresses the link between playful approaches and inclusive education. Through the methodology of gamification, it is possible to promote knowledge of oneself and one's potential in a constant relationship with the environment and others. It contributes, through direct experience, to the formation of the pupil's personality through knowledge and awareness of their bodily identity by becoming protagonists in their learning<sup>[5]</sup>. Therefore, the use of innovative methodologies such as gamification is intended to foster the development of conceptual learning and cognitive, emotional, and social development in parallel<sup>[6]</sup>. This further emphasizes that, in today's school that lives and collaborates with today's society, teachers must be able to offer new forms of teaching that make use of innovative and effective methodologies, workshops, and projects, placing the learner at the center of the teaching process.

Within this theoretical framework, continuing professional teacher education is understood as a continuous process that encompasses all formal and informal learning experiences and puts all school staff in a position to reflect on what they are doing, to recognize the need and responsibility to reinforce their knowledge and skills, and to improve their working methods so that the learning and well-being of pupils are consistently qualitatively high<sup>[1,7]</sup>. Considering that adulthood is not spared from skill decline, a lens needs to be placed on continuing teacher education, as professional development is correlated with maintaining a high level of competence<sup>[1]</sup>. Promoting the continuing education of teaching professionals means supporting a culture of lifelong learning in which the quality of teacher education is connected to the quality of student learning and, more comprehensively, to the personal success of each student in relation to orientation and approaching the world of work<sup>[8]</sup>. In this regard, the WHO, with the aim of wanting to support and accompany people in learning throughout their entire life span, recalling the notion of life-long learning, introduces the concept of life skills-based education (LSBE), reinforcing the relevance of the acquisition and development of life skills. Indeed, they are defined as "all those skills and competences that it is necessary to learn in order to relate to others and to cope with the problems, pressures, and stresses of everyday life"<sup>[9]</sup>.

Life skills learning can be addressed to young people and adults by transforming knowledge, attitudes, and values into real skills; 'Knowing' becomes 'Knowing How'. To foster the learning of life skills, experience must be the founding element of the full process, which is why a methodology such as gamification lends itself effectively to their acquisition<sup>[10]</sup>. Regarding life skills in professional adults such as teachers, in particular physical education teachers, they represent a key to governing relationships with pupils and the rest of the world and to actively dealing with the challenges of everyday life. Teaching life skills enables students to live their lives to the full and to orient themselves in the world by adapting to changing and multiple contexts. For teachers, it is about making a positive contribution to the education of those who represent the future of society. In light of what has been discussed so far, teachers need to have a wide range of teaching and educational tools and strategies.

Didactic action, based on an embodied competency-based didactic design, emphasizes collaborative, immersive, authentic, and laboratory learning environments, qualifying the teaching-learning processes with respect to the valorization of the potential and peculiarities of everyone. In this sense, in recent decades, the promotion and development of life skills have acquired a significant role in educational design aimed at

providing young people with the skills necessary for personal fulfillment and development, active citizenship, social inclusion, and employment. In the current scenario, the scientific community recognizes in the body and movement an extraordinary educational value that is indispensable for the overall development of the person<sup>[11]</sup>. The focus, therefore, shifts from the technical and performance objectives of motor and sports activities to processes oriented towards transversal knowledge, skills, and competences to be contextualized in other domains of life. This transfer process, by implementing Life Skills education actions, promotes the biopsychosocial well-being of the student and the improvement of the quality of teaching from an inclusive perspective. In this context, through the methodology of gamification, it is possible, in designed and controlled situations, to foster the development of life skills.

## **2. Promoting life skills from an inclusive perspective**

To cope with the complexities of the school world, there is a need for teachers who are able to integrate the specific and technical skills related to their work, so-called knowing-how<sup>[12]</sup>, with transversal competences (life skills). The need to promote equal education for all drives teachers to choose inclusive teaching, which values the particularities of students and conceives individual differences as a resource to be shared. In this context, characteristics such as social awareness, critical and reflective thinking, and empathy are considered important for all teachers, especially specialized teachers, who are urged to develop inclusion processes daily<sup>[13]</sup>.

Inclusive education is a process that takes into account the diversity of needs of all in order to promote participation and learning and to reduce exclusion and marginalization. It presupposes the transformation and modification of contents, approaches, structures, and strategies, with the conviction that the educational system as a whole has the responsibility to educate everyone<sup>[14]</sup>. In this perspective, inclusive schools have the duty to remove the obstacles that prevent full participation in social and educational life and to promote the right of all to be considered equal and different from others. In inclusive schools, the goal is to work toward recognizing diversity as singular and unique and valuing differences through the design of interventions aimed at socialization and learning. The legislative decree 13 April 2017 n. 6, in article 1, describes an inclusive school that involves students of all ages and genders, satisfying different educational needs, and reaching, through the education and training strategy, the development of people's potential while respecting self-determination and reasonable accommodation.

School inclusion takes place in the culture and education, in the planning, in the organizational identity, in the curriculum of each school, and in the sharing of personal projects between different audiences: schools, families, and public and private entities operating in the area. This is possible only through the connection between institutions and operators<sup>[15]</sup>. Therefore, the founding node is inclusive teaching, attentive to individual needs and resources, able to make each student the protagonist of learning regardless of skills, potential, and limitations, and favoring, as an ultimate goal, greater social cohesion. The concept of inclusion is therefore achieved through experiential learning and working with others when objectives and working strategies are shared. In the school setting, all teachers make sure to offer large-scale planning for the class group. What is needed is the use of methodologies that go beyond traditional teaching, able to combine the acquisition of knowledge with the development of skills, as per established regulations<sup>[16]</sup>.

The application of strategies and methodologies that foster cooperative learning, teamwork, and learning through discovery are just a few examples of the range of proposals for educational actions for the purpose of inclusion. Inclusive education is an educational paradigm created to guarantee the understanding of the individual's educational needs and the implementation of functional solutions, overcoming methodological rigidities and differences of all kinds. This inclusive approach aims to create optimal learning conditions to

overcome difficulties and differences, with the aim of allowing each student to discover, evaluate and realize their full potential. The main objectives of this approach are to differentiate and personalize teaching activities by promoting students' initiative, responsibility, and self-discipline<sup>[17]</sup>. The main pillars of inclusive education are: collaboration, planning, effectiveness, and finally relationships and emotions. The concept of school collaboration is realized when there is a strong participation of all the actors in the school environment, including managers, teachers, students, school staff, families, the local community, and services. The cooperation between all these personalities is based on their ability to join forces to remove all physical, methodological, social, and emotional obstacles to social participation and study. Design is inclusive when it is planned to be accessible to all students. It is conceived as an innovative and flexible teaching style that facilitates the participation, enrichment, and educational success of all students<sup>[18]</sup>.

The concept of effectiveness from an inclusive perspective suggests instead that teachers develop a series of educational strategies that prove effective not only for students with special needs and people with disabilities but for the whole class group. Finally, there is the relational and emotional aspect. An inclusive teacher cannot forget their relational and emotional skills. The teacher's proper mindset and the ability to provide appropriate and positive feedback to students are key factors in academic success. In terms of inclusive teaching, the point of view of the Erickson Study Center is also very interesting, which has identified seven dimensions of educational action on which to intervene to increase the degree of inclusion and improve the learning conditions of all students<sup>[19]</sup>. They are classmates resources, adaptation as an inclusive strategy, logical-visual strategies such as maps and schemes, cognitive processes and learning styles, metacognition and study methods, emotions and psychological variables in learning, and finally the concept of evaluation, verification, and feedback. As for the classmate resource, classmates are the most valuable resource for initiating inclusive processes. Strategies for working collaboratively, in pairs or in small groups, should be considered, as learning is never a solitary process but is deeply influenced by peer relationships, stimuli, and context. Adaptation as an inclusive strategy, on the other hand, means modifying the material according to the different skill levels and cognitive styles present in the classroom<sup>[20]</sup>.

To activate an inclusive dynamic, it is essential to enhance logic and images, especially using mind maps and concept maps. Still cognitive processes and learning styles; a truly inclusive teaching must enhance the different cognitive styles present in the classroom and the different forms of intelligence, both for the student and for the forms of teaching used. The dimension of metacognition and of the study method, on the other hand, concerns the conscious development of the student's own way of learning in order to structure a personalized and effective study method. The sixth dimension concerns emotions and psychological variables related to learning. It is essential for the teacher to develop good levels of self-esteem and self-efficacy, together with a positive internal attribution style, to increase motivation for the learning process. Finally, pay attention to the evaluation and verification processes. It is first of all necessary to customize the forms of verification, in particular in the formulation of requests. The evaluation then must be formative, therefore motivating and not punitive.

### **3. Playful approach and gamification**

Over the past decade, gamification has found increasing space in the educational field. In particular, in the context of physical education, gamified learning environments represent the most common learning methodology scenarios.

According to Val Martín et al.<sup>[21]</sup> a quality Physical education should use active methodologies in order to enhance student learning, improve their sociability and teamwork, and promote meaningful learning and critical thinking. In this way, the teacher assumes the role of facilitator of learning, and the student becomes

an active part in the process of building knowledge through direct experimentation, curiosity, emotion, motivation, and attention<sup>[22]</sup>.

As Arufe Giráldez et al.<sup>[23]</sup> claim, gamification realizes an attractive and motivating educational experience able to increase the enthusiasm and availability to learn of the students, enjoying the benefits of the pedagogical tasks, through the use of elements of the games.

Several Authors<sup>[24–28]</sup> highlighted that gamification in the field of physical education achieves its maximum potential when combined with other active methodologies, pedagogical models (i.e., cooperative learning, service learning, sports education, adventure education), or technologies, such as social networks, virtual and augmented reality, or mobile applications. In a paper published in 2020, Lamedona Prieto et al.<sup>[29]</sup> suggest that the hybrid implementation of pedagogical models has the largest advantages compared to isolated implementation, arguing that the first one could promote results in several different domains, bypassing the limitations of individual pedagogical models.

In this inclusive perspective, as can also be seen from the National Indications for the Curriculum, play is the preferred learning method for pupils. In the National Indications, we read that in the game, particularly the symbolic one, children express themselves, tell, and re-elaborate their personal and social experiences in a creative way. The game is therefore configured as a tool for inclusion because it fully invests in the emotional sphere, and that is why, when it is conceived and used in schools for didactic purposes, it needs competent organization and management by the teachers. Playful activities allow teachers to improve the quality of relationships with their students, as teachers are required to stay in the group but at the same time do not replace the members of the group itself. Specifically, the function of the teacher should be that of moderator and someone who supports and helps the group in difficult moments. Teachers have the concrete possibility of enhancing play as a privileged resource for relationships, learning, and, above all, inclusion. It is precisely in this context of playful learning methodologies that, in the first decade of the 2000s, the term gamification emerged for the first time<sup>[30]</sup>, acquiring more and more relevance in scientific literature. Gamification is, first of all, a practice; it is the act of applying game principles to contexts that usually are not, using specific and characteristic aspects of the game itself<sup>[31]</sup>. Unlike the traditional game, gamification is characterized by a serious purpose and by the use in non-playful contexts of game elements, as previously highlighted, with the goal, however, of learning. Specifically, learning refers to the ability to achieve defined objectives through the content of the game itself, for example, by improving the results obtained by students, who in turn become players and protagonists of the process<sup>[32]</sup>.

The peculiarity of this method is that it takes place in a pedagogical context conceived by the teachers, who, with the help of already existing games and practices, allow the discovery and application of knowledge also present in the real world. It is essential to underline that the role of the learner in the gamification experience is active. One of the basic principles of the whole system is, in fact, the intention to encourage positive behaviors among the participants. These active behaviors are the real driving force of the strategy considered by referring to and leveraging a strong motivational component in which efficiency is not sought but precisely active participation<sup>[33–35]</sup>. It is also clear that in the school environment, the use of such teaching strategies is closely linked to new information and communication technologies (ICT), which can perform many different functions. A very simple example is teaching design support for the whole class using educational software and the potential of the internet. It goes without saying that, compared to the recent past, the teacher currently has all the means to adapt the digital potential to the didactic strategies, starting the didactic-digital integration without compromising the learning objectives.

## 4. Conclusions

In general, studies on gamification in relation to inclusive teaching in the school environment would seem to deserve further study. As previously mentioned in other sections of this narrative review, the limits highlighted in terms of the number of contributions are a factor that apparently blocks the process of gaining knowledge of the area considered. Therefore, some research gaps in the field of non-directive teaching methodologies appear evident, including studies on the same practice of gamification in relation to inclusive teaching, a gap that, as mentioned above, can in any case become opportunities for expansion and deepening, therefore starting from the same methodological basis. Expanding research on gamification by comparing a research group and a control group on the goodness of the method itself in the school and therefore didactic context and applying the playful approach proposed at various levels of education are just two simple examples of how, starting from this contribution, it is possible to further develop the starting hypotheses, adding a further contribution to the link between inclusion, inclusive teaching, and gamification.

## Author contributions

Conceptualization, FT and FS; methodology, FT; investigation, FT and ES; data curation, ES; writing—original draft preparation, FT and FS; writing—review and editing, ES. All authors have read and agreed to the published version of the manuscript.

## Conflict of interest

The authors declare no conflict of interest.

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