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Playing Bodies: Functional Advanced Didactics As An Innovative Strategy For Experiential Teaching

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Abstract: This study introduces Functional Advanced Didactics (FAD), an innovative experimental teaching method that integrates physical exercise with traditional school disciplines. The FAD is based on the methodology of gamification and the principles of embodied cognition theory. The aim is to promote active and multidisciplinary learning through play-motor experiences for primary school students The method involves three weekly sessions of one hour each, with an educator-speaker ratio of 1:10. Each session includes a warm-up phase, gamified teaching activities linked to curriculum subjects and focused on body experience, a debriefing to verify learning and a final "feel education" to reflect on emotions experienced. Compared to traditional methods, FAD aims to make learning more engaging, exploiting the potential of play and movement in space to facilitate the acquisition of abstract concepts in an experiential way. This study describes the theoretical foundations and methodological structure of FAD, paving the way for future empirical research on its effectiveness in primary education.

Keywords: Embodied pedagogies; Gamification in learning; Student-Centered Pedagogy; Human sciences; Experiential Learning

1. Introduction

The advent of new technologies is revolutionizing conventional learning methmethods (da Silva et al., 2022) and this change has led to the development of essential digital skills that enable individuals to educate themselves in a highly technological society (Sullivan, 2022).

This revolution, in recent years, has involved an increase in new educational models developed around these skills, with significant advantages on motivation and results over traditional teaching methods.

The spread of these systems is probably due to their ability to promote motivation among students; because they use game design techniques (Groh, 2012) that

observe the principles of Huzinga (2020), according to which the game represents a liberating dimension that transcends ordinary life.

It should be stressed that the effectiveness of these methods has been confirmed by several scientific studies: For example, following an experiment conducted by Lin (Lin et al., 2017) on a sample of 116 students, divided respectively into 2 groups, one with digital learning and one with traditional teaching, the results showed that teaching assisted by some digital content such as videos and e-books, had the ability to improve both the motivation and learning among students compared to a conventional teaching method.

However, despite improvements in terms of teaching performance (Haleem et al., 2022) the improper use of technological devices is causing negative consequences on the academic, family and social aspects of student life (Guillén et al., 2017), as well as difficulties concerning the teachers themselves, many of whom are in trouble due to a digital gap created between the new and old generations, i.e. a strong difference created between digital natives who use the new technologies and the previous generations who use them occasionally (Van Dijk, 2020).

An over use of technological devices can lead to an increase in sedentary levels (Straker et al., 2022), with the risk of falling into even serious diseases including diabetes, obesity and cardiovascular problems, diseases increasingly widespread among the younger (Messiah et al., 2019; Prieto et al., 2021), in fact, it is estimated that about 32.5% of the boys aged between 18 and 39 years have at least one chronic disease related to a seated lifestyle (Allana et al., 2012).

Moreover, the new generations are increasingly prone to sleep disorders, as the excessive use, especially in the night hours, of commodities such as smartphones, is causing an increase especially among subjects between the ages of 2 and 18 years of age (Höhn et al., 2021; Trosman & Ivanenko, 2021).

Additional problems associated with the use of technological devices may concern students in the pre-puberal and puberty age, who, if not limited in using tablets and phones, can suffer damage concerning cognitive plasticity, that is, the ability to acquire new cognitives (Danovitch, 2019; Siregar & Yaswinda, 2022), with the possibility of compromising important functions such as working memory (Wacks & Weinstein, 2021) and attention (Pluck, 2020).

Conversely, an embodied centred teaching method, i.e. an educational approach that recognizes the importance of the body and its physical and emotional responses in the learning process (Iavarone, & Iachini, 2012; Rosa, & Tafuri, 2023), in addition to overcoming a possible digital gap, could also be useful in preventing sedentaryness and therefore a whole series of risk factors that can lead to the development of chronic diseases (Di Raimondo et al., 2016), except to be an important ally in restoring the natural balance between sleep and waking. As suggested by Taylor (2001) and Kline (2021), a teaching approach that involves the integration between school subjects and exercise, could improve cognitive plasticity (Willis & Schaie, 2009) because motor activity, if incorporated with other disciplines, can combine physical and cognitive demands leading to further cognitive gains (Gomez –Paloma et al., 2016) which can be further implemented through the use of gamification (Ganesan et al., 2016).

1.2 Theorical-methodological fundaments

The use of methodologies based on the principles of embodied cognition theory, i.e. on the ability of the body to foster learning processes through its perceptive system and through its movements within space (Foglia & Wilson, 2013), is a valid theoretical-methodological space because, if the learning process was reduced to pure mental representations, it would be characterized by great effort (Wilson & Golonka, 2013).

These models have been the scientific reference of educational research studies that have highlighted the relationship between corporality and learning (Ferri & Gamelli, 2017; Martin & Murtagh, 2017), clarifying the importance that motor activity can have in favouring curricular teachings.

In fact, as argued by John Dewey (1951), teaching through the body implies experiential or incarnate learning that is activated before reflective thinking and does not involve propositional or representative content.

The establishment of teaching-motor protocols formulated according to the principles of learning by doing (Kitago & Krakauer, 2013), i.e. a transaction between the individual and his environment, in which the individual interacts actively with the same, (Papastephanou, 2017) revitalizes the function of the body as a "educational tool" within an active methodological approach (Montessori, 2018), which involves the adoption of game design techniques within a non-formal context, such as the school context (Gurbuz & Celik, 2022).This approach can encourage practical and motor initiatives, both spontaneous and decided, operating in the context of cooperative learning among peers (Slavin, 1980; Millis, 2023), with the aim of encouraging the progress of thought and intellectual actions that serve as indispensable tools for self-realization.

1.3 Play and learning: a constant with time

The playful behavior within the animal world, it turns out to be a complex phenomenon that can have some instinctive components, but that is also shaped by evolutionary processes (Pellis et al., 2019). This attitude among mammals is considered a vital instinct wired into the brain, important for development and social bond, essential component for the survival of many species belonging to this family (Marks-Tarlow, 2012).

Even among human beings, play has been a constant from an early age and is not by chance considered a fundamental right in the life of the child, because through its part of communication is channeled, thus playing a crucial role in psychosomatic development (Koukourikos et al., 2015). In fact, through play activities children can take refuge in a safe space, in which they can learn to express their problems and to regulate emotions, promoting emotional and behavioral adaptation (Schneider et al., 2022); thus asserting control of their learning and encouraging problem-solving skills and thus creativity (Ahmed et al., 2023).

Also in school environments, playful activity among pupils plays a significant role in the learning process, as, in addition to reducing anxiety states, it helps to improve student participation and motivation, making learning pleasant and collaborative (Peña, 2020; Sangwan, 2023).

As far as teachers are concerned, even for them, play is increasingly playing a central role within the educational paths, especially for the study of certain disciplines,

such as those that prefer the studies of nature. which are increasingly practiced freely in outdoor spaces (Eira & Azevedo 2020).

Therefore, recreational activities prove to be essential in pursuing the objective of promoting a pedagogical method that is characterized by a student-centred approach (Hovey et al., 2020). A valid example of this is the Montessori method, which was adopted by the neurologist already in 1907, after the opening of the first Casa dei bambibni in the city of Rome (ITA) (Sarıca, 2023). This method, which is widely used throughout the world, consists of an approach that involves learning focused on children, with practical activities aimed at enabling them to freely choose their work and build their learning (Bavlı & Kocabaş, 2022).

The Montessori method owes its fortune precisely to the gamified teaching and the myriad of educational games that characterize it, which are still used today to teach practical life skills, mathematics, sensory development and other areas of teaching, emphasizing concrete learning and self-directed activity (Atis-Akyol et al., 2023).

Even in adulthood, play and gamified activities can have a positive impact on learning and skills development within workspaces (Ganesh et al., 2023), as well as in non-formal educational practices dedicated to the same (Samodumska et al., 2023).

Gamification can also be used as a strategy to promote and educate adults to adopt healthy behaviors, useful to preserve their health (Cuesta-Vargas et al., 2023). In addition to preserving cognitive functions among the elderly, as the use by them of multimodal training platforms that provide elements typical of video games, significantly improve cognitive performance, especially in subjects with mild cognitive decline (Goumopoulos et al., 2023; Pérez Rodríguez et al., 2022).

In summary, playful behavior represents a cross-cutting phenomenon, which encompasses multiple spheres of an individual's life from an early age (Proyer, 2022; Rosa et al., 2010). The importance of play ranges from the psycho-physical development of the child to the acquisition of cognitive and social skills in adulthood (Mannard, 2023), to the maintenance of mental faculties in the more advanced stages of existence. This versatility makes it an indispensable pedagogical and training tool, able to promote experiential learning and the holistic development of the individual in every phase of his or her existence (Sáez-López et al., 2024). Affirming its evolutionary value as an enabling factor for adaptation, personal development and the expression of human potential in its multiple declinations (Doménech Girbau & Marbà Tallada, 2022).

1.4 Functional Advanced Didactics (FAD): An Innovative Method of Teaching embodied based

Functional Advanced Didactics (FAD) is an experimental teaching method which integrates physical exercise with conventional teaching disciplines with the aim of promoting active and multidisciplinary learning, which involves the acquisition of concepts and knowledge through an experiential process characterized by the mixing of academic subjects that share common mechanisms (Kaittani et al., 2017).

the FAD is based on the methodology of gamification (Yaroshenko et al., 2022), which includes game techniques in an unconventional educational context (Palová & Vejačka, 2022). Moreover, this method is based on the principles of the Embodied cognition theory (Gee, 2023), which emphasizes how the body, through the perceptive system and its movements in space, can facilitate the learning process (Kirsh, 2013). This educational strategy is aimed at children in the first cycle of primary school, with the aim of strengthening existing skills and promoting the assimilation of

new concepts and knowledge. The main objective of FAD is to revolutionize traditional teaching methodologies by introducing a new language that incorporates elements of play, group activities, results and the use of scores and rewards. In essence, this approach seeks to facilitate the acquisition of specific ideas relating to the subjects dealt with in schools, while recognizing the importance of developing cross-cutting skills applicable to various disciplines. For each individual school subject, play activities are designed to focus on concepts and notions common to physical education. This strategic approach was designed to transfer a wide range of skills to as many students as possible.

2. Methods

FAD is an experimental teaching method that through the methodology of gamification, (Robson et al., 2015), in communion with the principles of embodied cognition theory, (Shapiro & Stolz 2019). It aims to replicate concepts and notions relating to conventional teaching disciplines, through a play-motor teaching approach.

This method, which has been conceived for primary school students, involves 3 sessions per week for a duration of one hour sitting, with a pupil educator ratio of 1-10. It includes an initial heating phase lasting about 10 minutes, aimed primarily at developing laterality and training the basic motor patterns.

Next, before administering any motor play activity related to the specific subject, the educator will explain to the students involved the rules to be followed and the tasks to be performed through practical demonstrations. At the end of each individual activity, before moving to the next teaching unit, a short debriefing will be held, which will have the aim of verifying the acquisition of the concepts dealt with and to clarify any doubts on the part of the students.

At the end of the hour that makes up the individual unit, in order to reduce fatigue, a post-intervention session is held during which a short session of "education to feelings" of about 10 minutes is proposed. In this activity, the comparison, dialogue and recognition of emotions are practiced, with the aim of promoting the understanding and acceptance of the emotions.

3. Conclusions

This contribution is the result of a profound reflection on the use of technologies and the effects they can have both in terms of learning and on the health of learners. The document aims to explore the possible educational options that can be used as an alternative to digital tools.

The teaching methods that envisage the use of the body as a tool for an active understanding of concepts and notions relating to conventional school disciplines, are undoubtedly a valid alternative to technologies, since, in addition to having in common with the same the possibility of resorting to game design techniques, they envision movement within a physical space, which consistent with the principles of the Embodied cognition theory, involves an experiential learning that is activated before reflective thinking and is free from propositional or representative content.

In this regard, FAD represents an innovative teaching method that aims to promote a more interactive and engaging learning experience, incorporating both interdisciplinary and subject-specific competences.

This approach, through a playful philosophy, aims to stimulate the understanding of otherwise abstract concepts and notions, making them tangible and reproducible.

In fact, through the use of educational cards that provide for cooperative learning activities and experiential learning, it is hoped to foster the acquisition of knowledge and the ability to work with peers, as this method also includes activities of recognition of emotions towards oneself and towards others.

In conclusion, considering the potential of this method, it is advisable to investigate its applications by trying to understand its effectiveness in an evidence-based research logic.

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