Mizar. Costellazione di pensieri

Rivista del Dipartimento di Studi Umanistici
Unisalento

n. 20 - Gennaio-Giugno 2024

The teaching body: a new experimental method of immersive teaching between technologies and corporeity

Santolo Ciccarelli [1], Francesco V. Ferraro [2]

1 Università degli Studi di Napoli Parthenope, Italia;
2 Clinical Exercise and Rehabilitation Research Centre, University of Derby, United Kingdom;

Abstract: The article aims to describe a novel teaching strategy designed to train teachers in the use of Advanced Functional Didactics (FAD), an experimental didactic method designed to improve learning and social relationships among adolescents. The FAD is based on embodied cognition principles, according to which the body and its interaction with the surrounding environment can foster the acquisition of knowledge; additionally, the FAD integrates physical exercise with the methodology of gamification to facilitate adherence and engagement. Through the integration of traditional school subjects with motor activity, FAD facilitates the student-centred active approach.
Therefore, we designed an immersive teaching protocol, lasting two hours per session, bi-weekly and running after one month with pedagogists. During the course, teachers will find themselves interpreting both the role of educators, teaching FAD to other pupils.
This strategy designed for teachers but directed at learners underlines the urgency of investigating its effectiveness so that its potential can be demonstrated through empirical research.

Keywords: Embodied theories; Gamified learning; Experimental Pedagogy

Riassunto: L'articolo si propone di descrivere una nuova strategia didattica progettata per formare gli insegnanti all'uso della Didattica Funzionale Avanzata (DAF), un metodo didattico sperimentale concepito per migliorare l'apprendimento e le relazioni sociali tra gli adolescenti. La DAF si basa sui principi della *embodied cognition theory*, secondo cui il corpo e la sua interazione con l'ambiente circostante possono favorire l'acquisizione di concetti e saperi; inoltre, tale metodo integra l'esercizio fisico con la metodologia della *gamification* per facilitare l'aderenza e il coinvolgimento. La DAF, attraverso l'integrazione delle materie scolastiche tradizionali con l'attività motoria, propone un approccio attivo incentrato sullo studente. Pertanto, è stato immaginato un protocollo didattico immersivo, della durata di due ore per sessione, con cadenza bisettimanale e della durata di un mese. Durante il corso, gli insegnanti si troveranno ad interpretare il ruolo di educatori, insegnando la DAF ad altri colleghi.
Questa strategia pensata per gli insegnanti ma rivolta agli allievi sottolinea l'urgenza di studiarne l'efficacia, in modo da poterne dimostrare il potenziale attraverso la ricerca empirica.

Parole chiave: Teorie embodied; Apprendimento ludico; Pedagogia sperimentale

DOI 10.1285/i24995835v2024n20p17

Mizar. Costellazione di pensieri

Rivista del Dipartimento di Studi Umanistici
Unisalento

n. 20 - Gennaio-Giugno 2024

1. Introduction

The growing interest in social networks, video games and streaming platforms (Clark & Sugiyama, 2015) is changing social habits and relationships, resulting in higher levels of sedentary behaviour (Jayalakshmi et al., 2021).

The introduction of physical activity protocols linked to the teaching curriculum in schools can foster engagement (Bremmer & Nijs, 2020), combat sedentariness, and promote social relationships (Keevallik, 2022). Such activities, based on the embodied cognition theory, i.e. on the body's capacity to foster the learning process through its movements within space and through its perceptual system (Farina, 2021 & Deng, 2023) could be integrated in turn with the gamification methodology, which, through play, fosters adolescents' motivation and participation in motor activity (Giacobo et al., 2023).

Proposals that integrate the playful component to exercise for learning purposes have already been adopted in the past. For example, in a recent study conducted in Poland by Wawrzyniak (2022), the effectiveness of embodied pedagogies in teaching was examined through year-long experimental research involving 70 first-grade students, divided into four groups: one control and three experimental groups led respectively by a physical education teacher, a classroom teacher, and a mixed team consisting of both. The study focused on the use of *eduballs*, educational balls with letters and numbers, as an embodied method in the three experimental groups, while the control group performed normal physical education activities.

The results indicate significant improvements in cognitive (mathematical, reading and writing) and basic motor skills (locomotion and object control) in all three experimental groups that used *eduballs*, compared to the control group. This suggests that embodied pedagogies can be effective in improving both cognitive and motor skills in primary school students, regardless of the type of teacher conducting the activities.

In this regard, the research group of the University of Naples Parthenope (ITA) and the University of Derby (UK), intends to propose a training course for teachers, through which they teach the administration of Functional Advanced Didactics (FAD), a novel

Mizar. Costellazione di pensieri

Rivista del Dipartimento di Studi Umanistici
Unisalento

n. 20 - Gennaio-Giugno 2024

teaching methodology summarised in figure 1.

The FAD objectives are to enhance the knowledge that is already possessed by teachers who carry out their work in a conventional manner and to train individuals who are fully aware of the potential of embodied centred learning (Ceciliani, 2021).

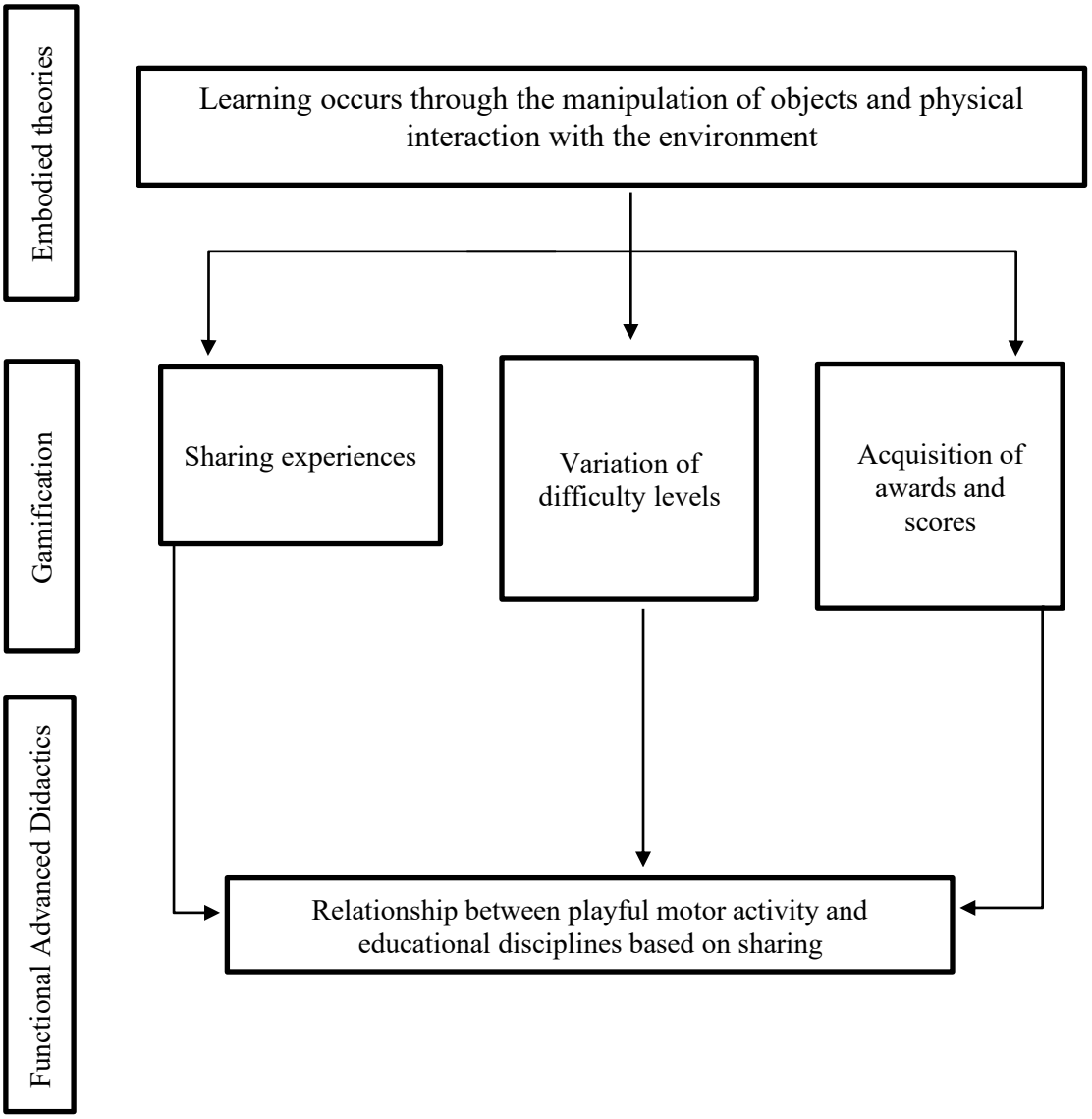

Figure 1. *Elements characterizing FAD*

2. Methods

The use of teaching methods such as FAD implies that teachers are already able to master the theoretical-practical knowledge concerning movement in such a way that it can be integrated into the other school subjects. Therefore, the methodology that we want to propose involves the use of an immersive teaching procedure that uses active and engaging learning practices, supported by technological tools (Iavarone et al., 2017).

This strategy, lasting two hours per session, bi-weekly and starting after one month, involves the simulation of practical activities identical to those that the participants themselves will propose to their pupils. These activities involve three phases, with the aim of: 1) train cognitive skills, 2) foster understanding of concepts and notions concerning the subjects covered and 3) improve emotional management, as reported in figure 2.

Through the practice of learning by doing, i.e. an educational approach based on learning through practical experience (Di Rienzo et al., 2019), participants will find themselves playing both the role of a lecturer, teaching FAD to and the role of a learner.

The teaching sessions also include the recording of videos, facilitated by a smartphone and a *gimbal* (a robotic tripod capable of stabilizing images), with the aim of providing pedagogical aids accessible to participants, which can be consulted when needed.

To measure the effectiveness of this teaching strategy, we intend to use a qualitative approach, which, through the administration of structured interviews to be carried out at the end of the course.

Mizar. Costellazione di pensieri
Rivista del Dipartimento di Studi Umanistici Unisalento
n. 20 - Gennaio-Giugno 2024

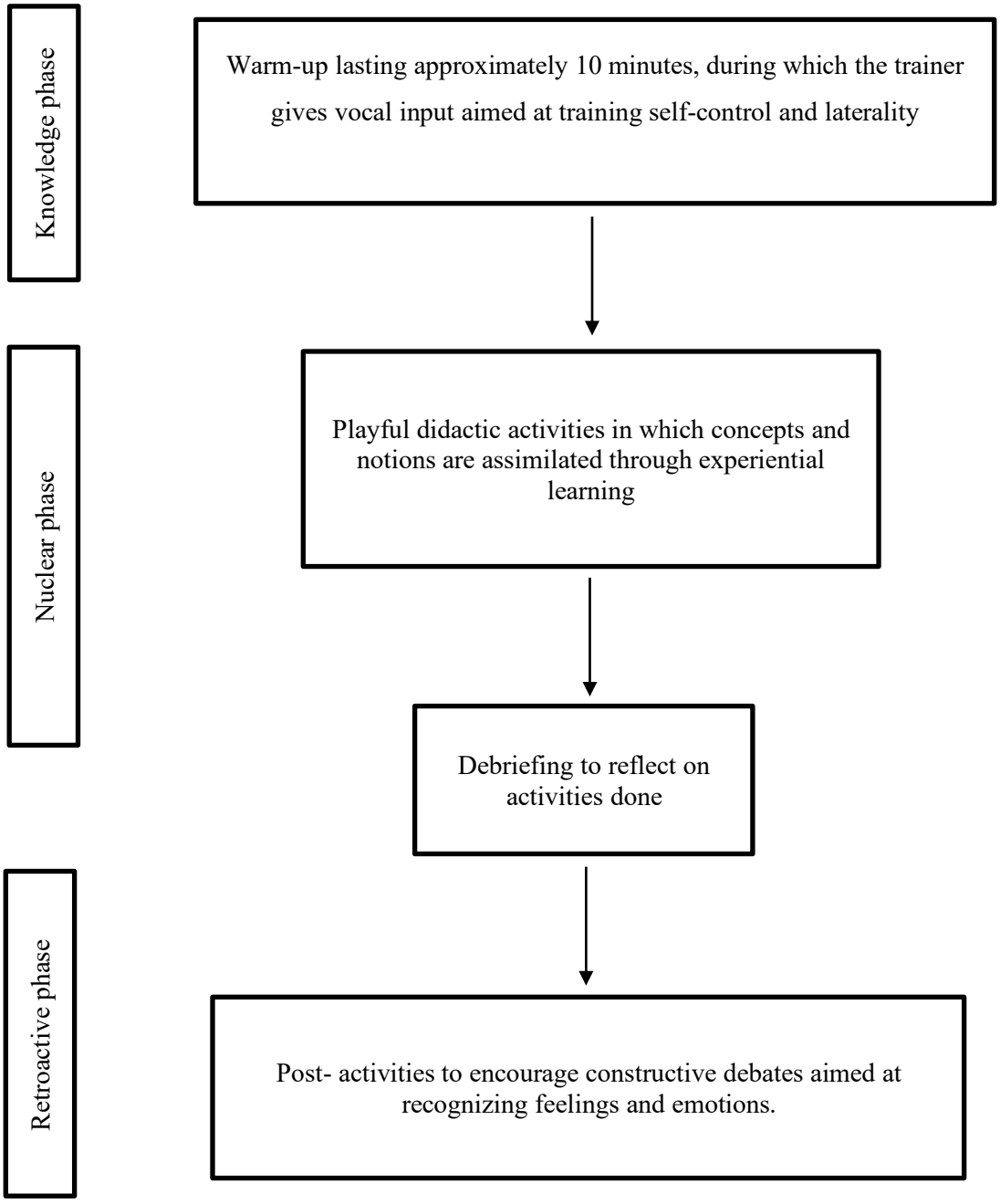

Figure 2. *Structure of a FAD session*

3. Discussion and conclusions

This contribution is the result of a reflection on the habits of adolescents and the role that the school can 're-cover' within their educational pathway, proposing an innovative didactic approach that use the body as a tool for an active understanding of concepts and notions concerning conventional school subjects. The use of a didactic method such as FAD can certainly represent an effective alternative to the transmissive didactic models currently adopted in Italy.

Proposals have already been made in the past that effectively integrate physical activity with other teaching disciplines, all of which are specifically geared towards acquiring knowledge and skills. For example, in a two years study conducted in the Netherlands involving 499 children attending the second and third grade of primary school, a teaching protocol called *Fit & Vaardig op School*, a physically active academic intervention that incorporates physical activity into mathematics and spelling lessons, was successfully tested. At the end of the project, students in the experimental group showed significantly greater improvements in mathematics speed tests than the control group (Mullender-Wijnsma et al., 2016).

In light of these considerations, an immersive training course aimed at teachers in order to encourage them to learn the FAD method is intended to provide tools to enable participants to use body movement to promote an active understanding of school subjects.

Bibliografia

Bremmer, M., & Nijs, L. (2020). The Role of the Body in Instrumental and Vocal Music Pedagogy: A Dynamical Systems Theory Perspective on the Music Teacher's Bodily Engagement in Teaching and Learning. Frontiers in Education, 5. https://www.frontiersin.org/articles/10.3389/feduc.2020.00079

Ceciliani, A. (2021). Maria Montessori and Embodied Education: current proposal in preschool education. Ricerche di Pedagogia e Didattica, 16(2). https://doi.org/10.6092/issn.1970-2221/12195

Clark, B., & Sugiyama, T. (2015). Prevalence, Trends, and Correlates of Sedentary Behavior. In K. Kanosue, S. Oshima, Z.-B. Cao, & K. Oka (A c. Di), Physical Activity, Exercise, Sedentary Behavior and Health (pp. 79–90). Springer Japan. https://doi.org/10.1007/978-4-431-55333-5_8

Deng, W., Guo, X., Cheng, W., & Zhang, W. (2023). Embodied design: A framework for teaching practices focused on the early development of computational thinking. Computer Applications in Engineering Education, 31(2), 365-375. https://doi.org/10.1002/cae.22588

Di Rienzo, P., Sommerhalder, A., Margottini, M., & La Rocca, C. (2019). Apprendimento permanente, saperi e competenze strategiche: approcci concettuali nel contesto di collaborazione scientifica tra Brasile e Italia (Lifelong learning, knowledge and Strategic Competence: conceptual approaches in the context of scientific collaboration between Brazil and Italy). Revista Eletrônica de Educação.DOI:10.14244/198271993584

Farina, M. (2021). Embodied cognition: Dimensions, domains and applications. Adaptive Behavior, 29(1), 73–88. https://doi.org/10.1177/1059712320912963

Giacobo, D., & Souza, O. M. de. (2023). GamIFica—Uma Solução Gamificada para Engajar Alunos de Ensino Médio de um Curso Técnico em Informática. Anais do Computer on the Beach, 14, 465–467. https://doi.org/10.14210/cotb.v14.p465-467

Iavarone, M., Presti, F. L., & Stangherlin, O. (2017). Participatory Didactics and the role of feedback through game-based technologies. Form@re - Open Journal per la formazione in rete, 17(1), Articolo 1. https://doi.org/10.13128/formare-20239

Mullender-Wijnsma, M. J., Hartman, E., de Greeff, J. W., Doolaard, S., Bosker, R. J., & Visscher, C. (2016). Physically active math and language lessons improve academic achievement: A cluster randomized controlled trial. Pediatrics, 137(3), e20152743. https://doi.org/10.1542/peds.2015-2743

Jayalakshmi, M. K., Raj, N. P., Shanmukhappa, N. J., & Johncy, S. S. (2021). Impact of Sedentary Life Style on Anthropometric and Cardiovascular Parameters. Highlights on Medicine and Medical Research Vol. 13, 110–118. https://doi.org/10.9734/bpi/hmmr/v13/2146F

Keevallik, L. (2022). The Body in Social Interaction. In Oxford Research Encyclopedia of Communication. https://doi.org/10.1093/acrefore/9780190228613.013.135

Wawrzyniak, S., Korbecki, M., Cichy, I., Kruszwicka, A., Przybyla, T., Klichowski, M., & Rokita, A. (2022). Everyone can implement Eduball in physical education to develop cognitive and motor skills in primary school students. International Journal of Environmental Research and Public Health, 19(3), 1275. https://doi.org/10.3390/ijerph19031275