MOTRIZARTE: PEDAGOGICAL INNOVATION THROUGH MOTOR STORYTELLING AND ART IN THE TRAINING OF EARLY CHILDHOOD EDUCATION TEACHERS

MOTRIZARTE: INNOVACIÓN PEDAGÓGICA MEDIANTE EL CUENTO MOTOR Y EL ARTE EN LA FORMACIÓN DE DOCENTES DE EDUCACIÓN INFANTIL

***Jose Coto-Lousas*[1], *Milca Iglesias Echevarría*[2], *Jacob Sierra-Diaz*[3], *Javier Fernandez-Rio*[3]**

[1] Department of Health Sciences, Public University of Navarre (UPNA), Spain

[2] Department of Art History, UNED Asturias, Spain

[3] Department of Education Sciences, University of Oviedo, Spain

Correspondence:
Jose Coto-Lousas, joseamador.coto@unavarra.es

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Abstract

This study evaluated the implementation of the teaching innovation project 'MotrizArte', which integrated art and the motor story as pedagogical tools in the training of future Early Childhood Education teachers. Using a mixed methodological approach, participants' perceptions of the use of art in the classroom were analysed. The results revealed significant changes in students' beliefs and attitudes regarding the usefulness of art in fostering creativity, motivation and active participation in learning. Furthermore, the MABL methodology facilitated the integration of key competences, values education and a more comprehensive assessment of sensory-motor skills. Participants rated the experience positively, despite pointing out some drawbacks related to the heterogeneity of the classroom and the resources needed for its implementation.

Keywords: Educational innovation, motor storytelling, art, early childhood education, teacher training.

Resumen

Este estudio evaluó la implementación del proyecto de innovación docente "MotrizArte", que integró el arte y el cuento motor como herramientas pedagógicas en la formación de futuros docentes de Educación Infantil. A través de un enfoque metodológico mixto, se analizaron las percepciones de los participantes sobre el uso del arte en el aula. Los resultados revelaron cambios significativos en las creencias y actitudes del alumnado respecto a la utilidad del arte para fomentar la creatividad, la motivación y la participación activa en el aprendizaje. Asimismo, la metodología MABL facilitó la integración de competencias clave, la educación en valores y una evaluación más completa de las habilidades sensomotrices. Los participantes valoraron positivamente la experiencia, a pesar de señalar algunos inconvenientes relacionados con la heterogeneidad del aula y los recursos necesarios para su aplicación.

Palabras clave: Innovación educativa, cuento motor, arte, educación infantil, formación docente.

Introduction

In the Dynamic landscape of contemporary social change, significant challenges arise across multiple spheres, with education being particularly affected (Sancho-Gil & Hernández-Hernández, 2018). Traditional educational methodology (centred primarily on teacher-led instruction) passive memorisation and the subsequent reproduction of knowledge (Nguyen et al., 2017), together with assessment based on standardised testing (Carroll et al., 2010) often fails to equip students with the knowledge and skills needed to face the problems they encounter in their daily lives (Escarbajal Frutos & Martínez Galera, 2023, p. 20).

Within this context, it becomes essential to investigate pedagogical and assessment approaches that are both innovative and dynamic, to understand how they operate and to promote the development of competences that remain relevant throughout learners' lives (Usman-Tariq & Sergio, 2025). Consequently, one of the major priorities in education is to prepare individuals capable of thriving in increasingly complex and rapidly changing environments (Flores et al., 2019).

As a result, the role of the teacher emerges as a key factor. Educators must move beyond the traditional transmission of knowledge and assume responsibility for cultivating essential skills in their students through the development of key competences (Council of the European Union, 2018). This transformation requires abandoning conventional pedagogical approaches and adopting new roles as guides, resource facilitators and designers of authentic and meaningful learning experiences (Hoogveld et al., 2005; Martínez, 2008; McKenney et al., 2015; Razzouk & Shute, 2012; Vitus, 2025).

In practice, teachers (particularly those working in Early Childhood Education) face diverse and complex challenges. They must act as architects of their classrooms, creating original teaching materials and designing pedagogical strategies tailored to the individual needs of their pupils and the specific context in which they work (Hernández-Leo et al., 2017). However, initial teacher education rarely focuses on developing these educational design skills, meaning that future educators are often not adequately prepared to undertake such demanding tasks (Vigo Arrazola & Soriano Bozalongo, 2014).

Among the most relevant areas of learning in Early Childhood Education (ages 0–6) is art. Numerous authors argue that art plays a crucial role in the early years, as it provides one of the most powerful means for children to express and represent their ways of interacting with the world and society (Alcaide, 2023). Over the past two decades, artistic education in early childhood has received considerable support (García Morales & López Ramos, 2024), as it is understood as a medium for expressing emotions, thoughts and fantasies even before the development of complex language. Consequently, children's artistic and visual expressions offer valuable insights into their personalities (Sánchez-Carlessi, 2018).

Within this field, approaches such as Visual Thinking Strategies (VTS) and Aesthetic Education (AE) stand out. Both are considered valuable practices for engaging students in the appreciation of artworks and are framed within active methodologies that place learners at the centre of their learning process, viewing learning as a constructive act of meaningful knowledge building (Jacobovski & Ferro, 2021). VTS, as defined by Hailey et al. (2015), uses art to cultivate thinking, communication and visual literacy skills through teacher-facilitated group discussions (Chin, 2017). Similarly, Greene (2018), whose work underpins AE, describes it as a deliberate approach designed to foster appreciation, reflection, cultural understanding and active engagement with art.

Another essential area of the Early Childhood curriculum is motor development, approached through psychomotor education (Hernández-Fernández, 2023). In this domain, motor storytelling emerges as a versatile pedagogical tool that not only supports motor development but also encompasses all educational domains, including artistic expression. These stories incorporate motor activities into narrative structures, enabling children to participate actively in their learning (Omeñaca, 2014). Research has shown that motor storytelling enhances social and emotional development and educational inclusion (Martos García et al., 2022). As Omeñaca (2014) explains, it involves *"a brief narrative with a simple plot... with proposals in which pupils participate, emulating the characters through meaningful motor action"* (p. 19).

A recent systematic review by Mareza et al. (2024) highlighted the importance of integrating motor activity with artistic elements such as visual or musical expression. However, no empirical evidence has been found regarding the use of motor storytelling as a pedagogical resource for addressing artistic content in a transversal and meaningful way, promoting holistic development (Ricci & Bianchi, 2025) and the transmission of positive values (Ferrer-Trenor & Valencia-Peris, 2024).

Within this paradigm, the flexibility of motor storytelling is considered particularly suitable for working with significant pictorial artworks while simultaneously contributing to the development of motor competence (Cunningham et al., 2025). In this way, motor stories become an educational tool that effectively complements VTS and AE by promoting physical and cognitive interaction with art and culture. This integration enriches the learning experience and gives rise to Motor Arts-Based Learning (MABL), which centres on learning through artistic expression combined with bodily movement as a foundation for appropriate motor development.

Based on this conceptual framework, the present study aimed primarily to analyse the beliefs of future Early Childhood Education teachers regarding the use of art (specifically pictorial works) as a pedagogical tool, and to promote its conscious and reflective implementation in training contexts. A secondary aim was to explore the MABL strategy through a motor story that integrates pedagogical resources from VTS and AE, in order to evaluate its impact on participants' perceptions and emerging teaching practices.

Material and Methods

Participants

A total of 101 students participated voluntarily in the study (n = 94 women, 93.07%; n = 7 men, 6.93%). All were enrolled in the third year of the Early Childhood Education Teaching Degree at the Faculty of Teacher Training and Education of a university in northern Spain. Participants ranged in age from 20 to 42 years (M = 21.51, SD = 3.17). All students signed informed consent forms and were reminded that they could withdraw from the study at any time, in accordance with the ethical principles of the Declaration of Helsinki (World Medical Association, 2025).

Instruments

An *ad-hoc* closed-response questionnaire (pre-test) was designed for the study. Its construction followed the Delphi method for item development. Initially, the authors (specialists in Physical Education and Art History) generated an item bank aligned with the dimensions to be assessed. This preliminary version was subsequently reviewed with two external experts, who contributed to refining and reducing the number of items. The final version was approved by an external university committee prior to implementation.

Internal consistency was examined using Cronbach's alpha (Edelsbrunner et al., 2025). The pre-test included a single section assessing beliefs about the use of Art History (specifically pictorial works) as a pedagogical tool for future Early Childhood Education teachers. Items addressed dimensions such as methodology (e.g., "Supone una metodología que requiere mayor compromiso por parte del profesorado"), interdisciplinarity, values education and assessment, rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree).

The post-test, administered after the intervention, consisted of two sections. The first assessed students' evaluation of the experience, including satisfaction, interest, learning, motivation and expectations. The second replicated the pre-test items to allow comparison between initial and final perceptions. In both questionnaires, items were introduced with the phrase "el uso de cuadros/pinturas en el aula de Educación Infantil…". Internal consistency was excellent, with α = .896 for the pre-test and α = .947 for the post-test.

An open-ended question was included as a complementary qualitative tool, following recommendations for enhancing the objectivity and depth of educational research (Posso Pacheco, 2023). During the Delphi process, experts agreed on the relevance of incorporating this item to triangulate quantitative findings. The prompt invited participants to describe the main advantages and disadvantages of using motor storytelling as a methodological tool, as well as any additional observations. Students were also asked to reflect on their level of satisfaction with the project, enabling a comprehensive evaluation of the methodology's impact and effectiveness.

Procedure

The research team first obtained ethical approval from the Ethics Committee of the University of Oviedo (reference code: 2023001; approval date: 14 March 2023), ensuring compliance with the principles of the Declaration of Helsinki. Subsequently, permission was requested and granted by the Museum of Fine Arts of Asturias to use its facilities for part

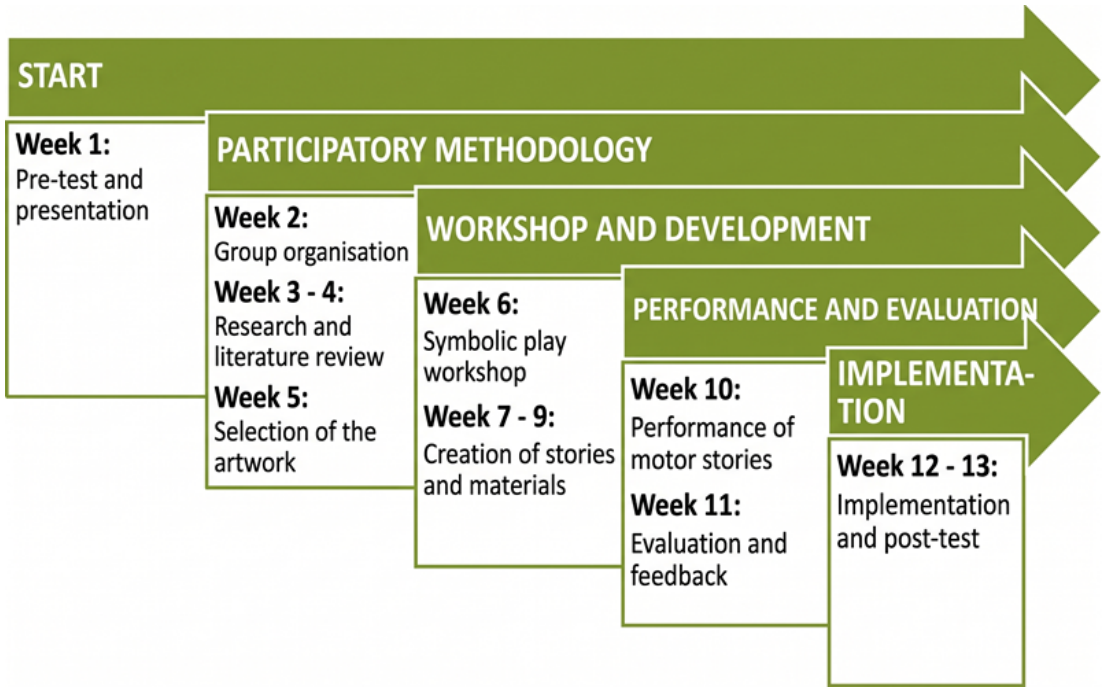
of the project. The study was then presented to the students, who provided informed consent after being assured that participation was voluntary and that all data would be treated confidentially, with no impact on their academic grades.

Intervention Programme

The teaching innovation project *"MotrizArte: Art through Motor Storytelling in Early Childhood Education Classrooms"* was implemented over the course of an academic term and was formally certified by the university. The intervention took place during February and March and continued into the students' teaching placements in local schools, resulting in a total duration of approximately three months (Figure 1).

Figure 1

Flowchart of the Intervention Process



In the initial phase, information was collected through the administration of a pre-test questionnaire to all participants. During the first week, the lecturer adopted an expository teaching approach in the classroom, presenting a selection of pictorial artworks from which students were required to choose one. The lecturer then explained the steps involved in designing a motor story, which students were expected to link to the selected artwork. From this point onwards, the methodology shifted to a participatory format.

Students were organised into groups of three to five members and carried out an in-depth investigation and literature review on their chosen topic. Each group appointed a spokesperson responsible for presenting the information gathered and a secretary to record the discussions. Once the research phase was completed, groups decided whether to keep the initially selected artwork or replace it with a different one.

To promote a collaborative and equitable working dynamic, basic rules of coexistence and cooperation were established from the outset in agreement with the students. The lecturer acted as a facilitator and mediator in cases of disagreement, encouraging dialogue and shared decision-making. Short group feedback sessions were also implemented at the end of each working day, enabling the identification and resolution of conflicts and the adjustment of roles and responsibilities within the teams. These strategies helped manage individual differences and strengthen group cohesion.

During the second week, students participated in symbolic play workshops at the Museum of Fine Arts of Asturias, which allowed them to discuss and refine their initial ideas. From the third to the sixth week, students worked on the development of their motor stories and the creation of the materials required for the activity. Following the structure provided by the lecturer, they completed the following sequence: (1) preparation of preliminary activities (optional); (2) creation of an initial

warm-up phase; (3) development of the motor story; (4) cool-down or relaxation; and (5) a guided reflection phase supported by optional follow-up activities.

Weeks seven and eight were dedicated to the performance of the motor stories and their evaluation. This process included self-assessment, during which students reflected on their achievements and limitations, as well as peer and teacher feedback aimed at identifying areas for improvement. Final evaluation was conducted using rubrics recorded in the lecturer's assessment log. The intervention was grounded in consolidated methodologies such as Project-Based Learning (Álvarez, 2023) and the task-assignment strategy (Shimon, 2025).

Finally, during the concluding phase of the project, students implemented their motor stories in the educational centres where they completed their teaching placements. Additional information was collected through a post-test to assess the impact of the activity on participants' learning and development.

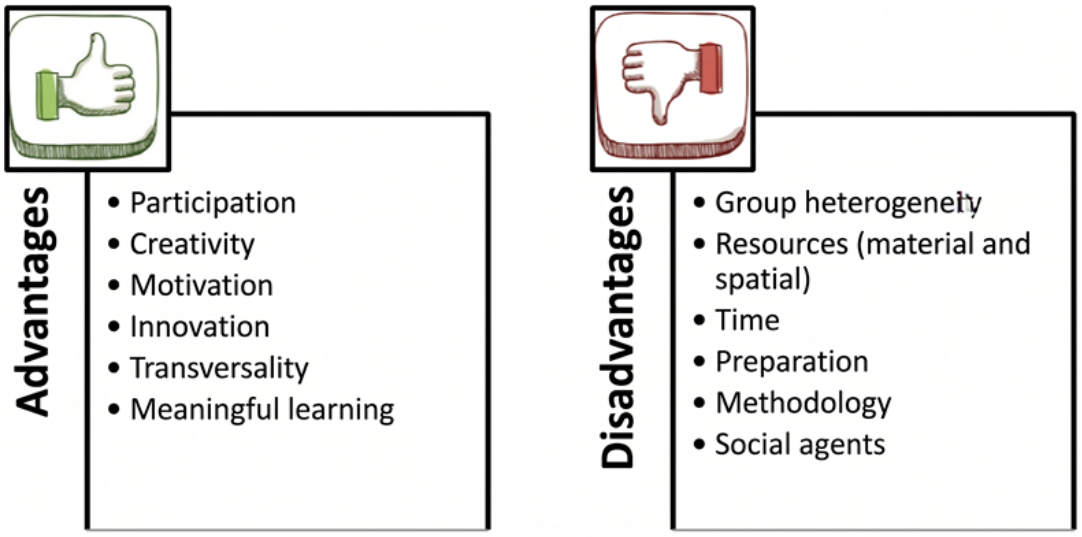
Statistical Analysis

Regarding the quantitative analysis, the normal distribution of the dependent variables was first examined. Once the suitability of applying parametric procedures had been confirmed, descriptive analyses (mean and standard deviation) were conducted based on the timing of the questionnaire responses. A factorial analysis was then performed using Student's *t*-test to compare the results before and after the intervention. All statistical procedures were carried out using SPSS, version 24.

For the qualitative analysis, an inductive method was employed through the categorisation of participants' open-ended responses. Specifically, two authors independently analysed the discursive content, assigning codes grouped into two main categories: advantages (n = 6 codes) and disadvantages (n = 6 codes) of the innovation, as illustrated in Figure 2. The coding scheme and interpretations were subsequently reviewed with the other two authors, and consensus was reached in cases of discrepancy.

Figure 2

Qualitative Analysis Categories Using an Inductive Approach (Post-Test)



Results

The findings of the study indicate statistically significant changes in the beliefs and attitudes of future Early Childhood Education teachers regarding the use of the MABL pedagogical approach, as well as a positive evaluation of the educational experience.

Beliefs About the Use of Art

Comparative analyses between the pre-test and post-test (Table 1) revealed significant changes across all evaluated variables. Post-test mean scores showed a notable increase in participants' perception of the methodological value of art.

Specifically, the mean score for the item referring to the need for greater teacher commitment increased from *M* = 3.29 (*SD* = 0.73) to *M* = 4.27 (*SD* = 0.74), while the corresponding item for student commitment rose from M = 2.88 (*SD* = 0.78) to M = 4.28 (*SD* = 0.68) ($p < .001$). These results suggest that participants now value more positively the capacity of art to engage both teachers and learners.

Table 1

Beliefs About the Use of Art as a Pedagogical Tool for Future Early Childhood Education Teachers (Pre-Test and Post-Test)

Analysis variables	Pre-test	Post-test	*p*	Cohen's d
	M* ± *SD	***M* ± *SD***		
METHODOLOGY	3.29 ± 0.73	4.27 ± 0.74		
Greater teacher commitment			< .001*	1.03
Greater student commitment	2.88 ± 0.78	4.28 ± 0.68	< .001*	1.11
More inclusive	2.81 ± 0.73	4.44 ± 0.65	< .001*	0.97
Improves work with pupils with specific needs	2.88 ± 0.87	4.27 ± 0.73	< .001*	1.13
INTERDISCIPLINARITY	3.04 ± 0.77	4.50 ± 0.54	< .001*	0.95
Enhances cross-curricular work				
Promotes the development of key competences	3.36 ± 0.76	4.44 ± 0.56	< .001*	0.96
Facilitates holistic knowledge	3.13 ± 0.70	4.51 ± 0.56	< .001*	0.90
Supports curricular adaptation for pupils with specific needs	2.94 ± 0.79	4.33 ± 0.76	< .001*	1.07
Enables pupils to engage in extra-curricular activities	3.65 ± 0.78	4.45 ± 0.67	< .001*	1.00
VALUES EDUCATION	3.17 ± 0.71	4.53 ± 0.59	< .001*	0.92
Promotes pupils' personal autonomy				
Develops moral values (respect, commitment, tolerance, solidarity)	3.12 ± 0.79	4.58 ± 0.58	< .001*	0.97
Develops intellectual and reasoning values	3.21 ± 0.79	4.44 ± 0.65	< .001*	1.06
Enhances creativity and imagination	3.80 ± 0.68	4.79 ± 0.41	< .001*	0.81
Enables more co-educational activities	3.18 ± 0.74	4.44 ± 0.65	< .001*	1.10
Enhances interaction among pupils	3.37 ± 0.67	4.70 ± 0.48	< .001*	0.72
ASSESSMENT	3.21 ± 0.85	4.64 ± 0.50	< .001*	0.89
Assesses pupils' sensorimotor skills				
Assesses pupils' engagement/attitude towards the proposed activity	3.47 ± 0.73	4.72 ± 0.45	< .001*	0.79
Assesses the full range of pupils' abilities	2.94 ± 0.75	4.26 ± 0.73	< .001*	0.89
Identifies/develops abilities in pupils with specific needs	2.94 ± 0.78	4.49 ± 0.56	< .001*	0.96
Offers more advantages than disadvantages for teaching practice	3.16 ± 0.83	4.51 ± 0.66	< .001*	0.98

Note. Likert scale from 1 to 5. *Significant pre-post differences at $p < .05$. Cohen's d indicates effect size: small (0.2–0.3), medium (0.5–0.8), and large (> 0.8).

In terms of interdisciplinarity, a significant increase was observed, with the mean rising from 3.04 (*SD* = 0.77) to 4.50 (*SD* = 0.54), reflecting a stronger perception that art facilitates the integration of key competences and the holistic nature of knowledge ($p < .001$). The variables related to values education also showed notable improvements, with mean scores increasing from 3.17 (*SD* = 0.71) to 4.53 (*SD* = 0.59) regarding the capacity of art to foster moral and intellectual values ($p < .001$).

With respect to assessment, beliefs about the usefulness of art for evaluating sensorimotor skills and pupils' attitudes increased significantly, with mean scores rising from 3.21 (*SD* = 0.85) to 4.64 (*SD* = 0.50) ($p < .001$). The calculated effect sizes (Cohen's *d*) suggest a large impact in the areas of methodology, interdisciplinarity, values education and assessment, highlighting the positive effect of the intervention on participants' beliefs.

In addition, an *a priori* statistical power analysis was conducted using the G*Power software (version 3.1), assuming a significance level of $\alpha = .05$ and a medium effect size ($d = 0.5$). With a sample of 101 participants, the resulting statistical power was .999, indicating a high capacity of the study to detect significant effects. This result supports the adequacy of the sample size and reinforces the validity of the findings.

Evaluation of the Experience

The evaluation of the educational experience (Table 2) shows a high level of satisfaction among the students. Participants indicated that the intervention enabled them to learn new content and activities (*M* = 4.44, *SD* = 0.55) and to improve their teaching skills (*M* = 4.44, *SD* = 0.55). The usefulness of the approach for the subject and its integration into practical learning also received high ratings, with mean scores of 4.45 (*SD* = 0.57) and 4.42 (*SD* = 0.68), respectively.

Table 2

Evaluation of the Experience (Post-Test)

Analysis variables	*M* ± *SD*
It enabled me to learn new content and activities	4.44 ± 0.55
It enabled me to improve my teaching skills	4.44 ± 0.55
I found it useful for this subject	4.45 ± 0.57
It reduced the time available to address the content of this subject	2.37 ± 1.06
It represented a significant benefit for me as a student	4.31 ± 0.55
I am satisfied with the experience of using it/them to learn in this subject	4.51 ± 0.56
I hope to use it/them when I become an Early Childhood Education teacher	4.54 ± 0.56
It contributed greatly to my practical learning in the subject	4.42 ± 0.68
It allowed me to demonstrate abilities that are rarely assessed in Early Childhood Education	4.28 ± 0.76
It increased my interest in the subject	4.22 ± 0.79
It motivated me to learn the content of the subject	4.13 ± 0.86
It enabled me to access more meaningful and more motivating knowledge	4.47 ± 0.61
It fitted very well with my way of learning	4.37 ± 0.69
It increased my commitment to the subject	4.13 ± 0.79
It increased interaction with my classmates	4.44 ± 0.69

Furthermore, the students reported that the methodology not only increased their interest and motivation in the subject, but also facilitated interaction with their classmates (*M* = 4.44; *SD* = 0.69) and aligned well with their ways of learning (*M* = 4.37; *SD* = 0.69). The scores indicate that the experience contributed significantly to their practical learning and to the development of abilities that had not previously been assessed within the context of Early Childhood Education.

Perspectives on the MABL Methodology

The open-ended question aimed to explore participants' perceptions of the advantages, disadvantages and observations related to the MABL methodology. The responses were grouped into 12 main categories: the advantages included aspects such as participation, creativity, motivation, innovation, transversality and meaningful learning; whereas the disadvantages encompassed group heterogeneity, resources (material and spatial), time, preparation, methodology and social agents. In addition, general observations were collected regarding the usefulness and applicability of the methodology in future educational contexts. The most relevant results for each of these categories are presented below.

Participation and Heterogeneity

Most participants highlighted that this methodology fosters creativity in both students and teachers, as it allows ideas to be expressed freely and dynamically. One participant noted: "It involves all pupils equally" (student 1), emphasising how this strategy motivates learners to participate actively in class. However, disadvantages associated with classroom heterogeneity were also mentioned, such as the difficulty of adapting activities to students with different personalities or special educational needs: "The difficulty of taking into account all the personalities that may be present in the classroom: there will be shyer people who will need specific roles assigned to them" (student 13).

Creativity and Resources

Creativity was one of the most frequently mentioned advantages. One participant commented that the methodology "develops creativity and imagination" (student 2). Nevertheless, a limitation identified was the need for specific resources to implement it effectively, both in terms of materials and space: "Perhaps the space in which to carry out the activities is not always adequate" (student 3).

Motivation and Time

Participants highlighted that this methodology is highly motivating for pupils, as it presents learning as an engaging and dynamic game: "As it is an activity that is not carried out very often, I consider that one of the advantages is the motivation it generates in pupils" (student 4). However, one of the most frequently cited disadvantages was the amount of time required for both preparation and implementation: "It takes quite a lot of time if you want everything to turn out well and perfectly" (student 5).

Innovation and Preparation

Many participants mentioned innovation as one of the main advantages, stressing that the methodology offers new ways of approaching learning: "It is an innovative resource that I had never used before" (student 6). However, they warned that

the preparation required is a significant challenge, as it demands extensive planning: "Preparing a motor story takes a lot of time, which we are not used to" (student 7).

Transversality and Methodology

The methodology was seen as a powerful tool for working on content transversally across different areas of the curriculum. One participant highlighted: "The possibility of addressing different content from the three areas of the curriculum, starting from play as a methodological orientation (something innate in early childhood). Moreover, it gives prominence to art, which is often neglected in education" (student 8). Nonetheless, methodological challenges were mentioned, such as the difficulty of adapting it to certain educational contexts: "Planning it within the school timetable, depending on the school and the freedom it gives to work on content from other perspectives" (student 9).

Meaningful Learning and Social Agents

Finally, the methodology was praised for fostering meaningful learning by connecting content with pupils' personal and practical experience. One student mentioned: "It allows it to be very practical compared to the usual theoretical basis, and fun" (student 10). However, the active involvement of both teachers and pupils was identified as a barrier in some cases, with comments such as: "It requires involving families and the teacher being an active participant in the class" (student 11).

In addition to the advantages and disadvantages mentioned, participants shared several observations that enrich the analysis of the MABL methodology, highlighting aspects such as practicality, adaptability and positive or negative experiences.

Practicality and Future Applicability

A significant number of participants emphasised the usefulness of the methodology for their future teaching practice. Comments such as "It has been an experience that has helped me for my future teaching practice" (student 12) underline its formative value. Others indicated that they would not hesitate to carry out similar activities when they become teachers: "Overall, it has been a very positive project for my learning, innovative and interesting" (student 13).

Innovation and Successful Implementation

The methodology was widely praised for its innovative nature. One participant commented: "I put it into practice and it was a complete success" (student 14). It was also positively valued as a different and attractive activity for both teachers and pupils: "An innovative activity and a way of doing things differently and attractively for pupils" (student 15).

Adaptation and Difficulties

Some participants pointed out the need for greater guidance to adapt the methodology to different educational contexts: "It would have been good to discuss how to adapt it" (student 16). This suggests that, despite its potential, the methodology could benefit from greater flexibility in its implementation.

Negative Experiences

Not all comments were positive. One participant mentioned a negative experience due to a lack of collaboration from classmates: "I did not have a good experience developing the motor story because the rest of the class did not collaborate or show a good attitude" (student 17). Such observations highlight the importance of creating a collaborative environment for the methodology to work effectively.

Positive Experience and Enjoyment

Most participants agreed that the experience was very positive for their training: "It has been an innovative and constructivist challenge for us as teachers, which fosters creativity and the satisfaction of going further and achieving it" (student 18). Many also expressed having enjoyed the process and their intention to apply it in the future: "I enjoyed it a lot and I will definitely put it into practice" (student 19).

Taken together, the qualitative responses help contextualise and enrich the quantitative results presented earlier. For example, perceptions of participation, creativity and motivation align with the increases observed in questionnaire items related to pupil engagement, the development of imagination and meaningful learning (see Table 1). Likewise, references to transversality and the future usefulness of the methodology reinforce the quantitative results regarding curricular integration and the positive evaluation of the experience (see Table 2). On the other hand, the difficulties mentioned regarding time, resources and group heterogeneity provide important nuances that do not emerge directly from the statistical data, underscoring the value of the mixed-methods approach adopted in this study.

Discussion

The results obtained show statistically significant changes in the beliefs and attitudes of future Early Childhood Education teachers regarding the MABL methodology, indicating its effectiveness in initial teacher training. The increase in scores from the pre-test to the post-test, together with a $p < .001$, suggests that this methodology is not only well received but also generates a positive evaluation of the role of art in learning (Paris, 2002). This shift in perspective is linked to greater commitment from both teachers and students, which is essential in an educational environment that prioritises holistic education. By fostering such commitment, art also enables teachers to work with pupils of diverse abilities, making teaching more inclusive and effective for students with specific needs (Cantor et al., 2018; Gerber et al., 2024).

On the other hand, the MABL methodology promotes interdisciplinarity, increasing the capacity to integrate different areas of knowledge. Participants reported an increase in scores related to the possibility of working transversally, which is essential for developing key 21st-century competences such as creativity and critical thinking (Martinez & Bonilla, 2024). This interdisciplinary approach not only facilitates more holistic learning but also allows educators to adapt the curriculum to the needs of each student, which is particularly beneficial in diverse educational contexts (Rajaram & Eren, 2024).

Similarly, values education emerges as a central aspect of the MABL methodology. Participants reported significant improvements in the capacity to foster personal autonomy and promote moral values such as respect, tolerance and commitment. These values are crucial for the holistic development of pupils and for building responsible citizenship (Henales Sánchez-Ocaña, 2024). The methodology also facilitates interaction among pupils, promoting collaborative learning that is essential for developing social and emotional skills (Mänty et al., 2022). This highlights the importance of creating a classroom environment that encourages interaction and active participation from all students, elements that are fundamental for meaningful learning (Cantor et al., 2018).

Finally, regarding assessment, the MABL methodology enables a more comprehensive evaluation of pupils' sensorimotor skills and their attitude towards the proposed activity. Teachers reported that this methodology facilitates the identification and development of various abilities in students with specific needs, underscoring its usefulness in teaching practice. This approach not only measures academic performance but also considers the holistic development of students, as reflected in the significant improvements in items related to attention to diversity, curricular adaptation and active participation (see Table 1), supporting its usefulness for promoting more inclusive and student-centred education (Gerber et al., 2024).

However, despite the growing interest in art-based active methodologies, the current literature presents an important gap: most studies have focused on consolidated school contexts or higher educational stages, leaving their application in initial teacher training (particularly in Early Childhood Education) relatively unexplored. As Salido López (2020) notes, many future teachers recall their previous artistic training as lacking innovation, highlighting the need to rethink the methodologies used at this formative stage.

Taken together, these findings not only support previous research that highlights the value of art in inclusive and participatory educational contexts (Cantor et al., 2018; Mänty et al., 2022), but also expand existing knowledge by applying the MABL methodology to initial teacher training, an area still underexplored. Unlike earlier studies focused on more advanced educational stages or specific artistic contexts (Gerber et al., 2024), this work demonstrates that integrating art as a methodological axis can generate significant changes in the pedagogical beliefs of future teachers from the early stages of their training. This contribution is particularly relevant for designing training programmes that integrate art as a transversal tool from the beginning of professional development, and it opens new lines of research on its long-term impact on educational practice.

Moreover, the qualitative data obtained through open-ended responses complement the quantitative findings by providing a deeper understanding of students' perceptions (Kuzmanovic & Bandak, 2020). While the questionnaires reflect significant improvements in aspects such as inclusion, motivation and creativity, the testimonies reveal practical barriers and necessary conditions for the effective implementation of the MABL methodology, such as resource availability, preparation time and teacher involvement. In a similar study, Restrepo (2018) emphasised the importance of teacher involvement in Early Childhood Education to ensure children's holistic development by fostering participation and autonomy in class. This methodological triangulation reinforces the validity of the findings and allows for a richer interpretation of the intervention's impact, as noted by Aguilar Gavira and Barroso Osuna (2015), who argue that combining qualitative and quantitative methods in the study of the same phenomenon strengthens the credibility and rigour of research.

Although the results obtained are promising, this study presents some limitations that should be considered. First, the sample size, although statistically sufficient, is limited to a single university context, which may affect the generalisability of the findings. Second, despite the internal consistency analysis, the use of an *ad-hoc* questionnaire may be subject to social desirability bias or subjective perception. Furthermore, the intervention was carried out over a relatively short period, preventing an assessment of the long-term impact of the MABL methodology. Future research could expand the sample to different training contexts and conduct longitudinal follow-ups to evaluate the stability of the observed changes.

Based on the results obtained, future research could focus on implementing the MABL methodology in diverse educational contexts, such as rural schools, multicultural classrooms or environments with a high presence of students with specific needs. It would also be relevant to explore its application in other educational stages, such as Primary Education or Secondary Education, to analyse its impact at different developmental levels. Likewise, longitudinal studies could be designed to evaluate the evolution of teachers' pedagogical beliefs over time after incorporating this methodology. Finally, it would be valuable to investigate the role of continuous teacher training in consolidating art-based pedagogical approaches, as well as the impact of family involvement and other educational agents on successful implementation. Another relevant issue will be addressing cross-curricular content with different areas, as presented in this document. This will provide significant pedagogical value for future teachers, who will see how areas such as Physical Education and Artistic Education can work together to achieve common objectives without restricting the content of their own area. In the future, these lines of research will not only allow the effectiveness of the MABL methodology to be validated in different contexts, but also help consolidate it as an innovative pedagogical tool adaptable to the demands of contemporary education.

Conclusions

The implementation of the MABL methodology, centred on motor storytelling and art, has proven to be an appropriate tool for enriching the training of future Early Childhood Education teachers. By promoting active and meaningful learning, participants not only developed pedagogical competences but also acquired a more inclusive and holistic view of education, integrating emotional, social and cognitive dimensions. The results suggest that this methodology has the potential to transform teaching practice by fostering creativity, collaboration and critical thinking, all of which are fundamental aspects of 21st-century education. However, adapting the methodology to diverse contexts remains a challenge, particularly in terms of resources and time, which highlights the need for greater structural and training support to ensure its effectiveness across different educational settings.

Ethics Statement

The study was conducted in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of the University of Oviedo (reference code: 2023001; approval date: March 14, 2023).

Conflict of Interest

The authors declare no conflict of interest. The funding bodies had no role in the design of the study, data analysis, or interpretation of the results.

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Author Contributions (CRediT Taxonomy)

Conceptualization: Coto-Lousas, J.; Iglesias Echevarría, M.; Fernandez-Rio, J.

Methodology: Coto-Lousas, J.; Iglesias Echevarría, M.; Fernandez-Rio, J.

Formal Analysis: Coto-Lousas, J.; Iglesias Echevarría, M.; Sierra-Diaz, J.

Investigation: Coto-Lousas, J.; Iglesias Echevarría, M.

Resources: Coto-Lousas, J.; Iglesias Echevarría, M.

Data Curation: Coto-Lousas, J.; Iglesias Echevarría, M.; Sierra-Diaz, J.

Writing – Original Draft: Coto-Lousas, J.; Iglesias Echevarría, M.; Sierra-Diaz, J.

Writing – Review & Editing: Coto-Lousas, J.; Iglesias Echevarría, M.; Sierra-Diaz, J.

Supervision: Fernandez-Rio, J.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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