Special Pedagogy and Educational Innovation

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Abstract
This study investigates the impact of incorporating collaborative learning and the Artsteps digital application into art education activities on the well-being and self-esteem of lower secondary school students. The sample of 150 students was divided into two groups: an experimental group involved in co-designing virtual exhibitions on the Olympics and the educational values of sport; and a control group engaged in traditional activities. A mixed-methods approach was adopted: quantitative, through administering the Student Subjective Well-Being Questionnaire (SSWQ) and the Rosenberg Self-Esteem Scale (RSES); and qualitative, through observation grids and interviews with teachers. The results revealed a notable enhancement in perceived well-being and self-esteem within the experimental group, particularly among students with psychomotor disabilities. The evidence indicates that the integration of structured collaboration and creative digital technologies can promote participation, motivation, socio-emotional development and inclusion, outlining a potential innovative model for arts education.

Keywords: *Collaborative learning, Digital teaching, Well-being at school, Self-esteem, Art education*

Introduction

As a theoretical and practical discipline, special education is based on recognising the uniqueness of each student and promoting educational pathways that foster their overall development (Ianes, 2006; Canevaro, 2010). From this perspective, inclusion is not limited to the physical presence of students with special educational needs in the school context, but implies the adoption of teaching, organisational and relational strategies capable of enhancing their potential, resources and cognitive styles (UNESCO, 2009; Booth & Ainscow, 2011). Consequently, schools must continually rethink their models to respond flexibly and equitably to differences, creating learning environments that promote well-being, participation, and educational success (Cottini, 2012).

Within this framework, collaborative learning is one of the most effective methodologies for promoting inclusion and socio-emotional growth. It is based on positive interdependence among group members, as well as individual and shared responsibility, and cooperative knowledge construction (Johnson & Johnson, 2009; Slavin, 2014). The social dimension of

learning is therefore essential not only for acquiring disciplinary content, but also for developing transversal skills such as relational and communication skills, negotiation, mutual aid, and conflict management (Gillies, 2016). Through collaborative activities, students can engage with different perspectives, learn new problem-solving strategies, and boost their sense of self-efficacy (Bandura, 1997). This is particularly important for students with disabilities or special educational needs, as they can find a supportive and welcoming environment within the group that encourages their active participation and reduces the risk of isolation (Norwich, 2013; Florian, 2014).

At the same time, the advent of digital technology has transformed the educational landscape, opening up new possibilities for expression and interaction. If pedagogically oriented, the integration of technological tools into teaching can significantly improve accessibility, personalisation of learning paths, motivation, and student engagement (Selwyn, 2016; Hennessy et al., 2022). Digital technologies also broaden the concept of the 'school product', enabling students to create complex multimedia artefacts to share with a wider audience. This approach is particularly effective in arts education, where digital tools that encourage individual and collective storytelling processes can enrich the creative dimension. The Artsteps application, which enables users to create three-dimensional virtual exhibitions, provides a dynamic and accessible environment in which students can design personalised exhibition itineraries integrating visual, textual, and multimedia materials. Developing a virtual exhibition is an innovative curricular activity and a meaningful experience of cultural communication, identity expression and work sharing. The digital environment acts as a 'third space' that facilitates alternative forms of participation, particularly for students who may struggle with oral presentations or traditional artistic production (Wexler, 2019). Numerous studies have demonstrated the positive impact of immersive technologies and collaborative creative projects on aspects such as well-being, self-esteem, and a sense of belonging. Creating environments in which students feel competent in their own learning process strengthens their self-perception and self-worth, promoting well-being and motivation (Deci & Ryan, 2000). This is particularly important during pre-adolescence, a developmental stage characterised by identity transitions, significant physical and psychological transformations, and the need to build meaningful relationships with peers.
In light of these considerations, this research project will analyse the impact of integrating collaborative learning, arts education and digital technologies — specifically the use of Artsteps — on the wellbeing and self-esteem of lower secondary school students. The study will focus on inclusive processes and opportunities for students with psychomotor disabilities. The study will explore the effectiveness of an innovative teaching strategy combining social-relational dimensions, creativity and technology to promote participation, agency and well-being among students.

1. Aim of the research

This study aims to investigate how the integration of collaborative learning and the use of the Artsteps digital application in art education can affect school well-being, self-esteem and the dynamics of collaboration and mutual help among lower secondary school students (Johnson & Johnson, 2009; Gillies, 2016). This innovative educational intervention aims to analyse not only the cognitive dimension of learning, but also the socio-emotional dimension, exploring how active involvement in shared creative activities can affect individual perceptions and interpersonal dynamics (Deci & Ryan, 2000; Bandura, 1997).

In particular, the study aims to:
1) Assess the impact of collaborative learning on students' perceived school well-being, analysing how cooperation in the design and creation of virtual exhibitions can foster a positive classroom climate, a sense of belonging and greater satisfaction with the overall school experience (Slavin, 2014; Wentzel, 2017).
2) Examine the effects of the intervention on self-esteem, considering direct participation in the creation of a digital museum product as an opportunity to strengthen the sense of self-efficacy, recognition of one's abilities and perception of one's personal and social value (Bandura, 1997; Harter, 2012).
3) Observe the dynamics of collaboration and mutual assistance, investigating the relational dimensions that emerge when students work in small, heterogeneous groups and share responsibilities, skills and decision-making processes. Particular focus is given to evaluating the quality of interactions, active participation and the ability to contribute to achieving common goals (Johnson & Johnson, 2009; Roseth, Johnson & Johnson, 2008).
At the same time, the study aims to explore the experiences of students with psychomotor disabilities within the proposed inclusive context. The integration of collaborative methodologies and digital tools is considered a possible means of reducing barriers to participation and encouraging active involvement in educational activities. Using cooperative approaches and virtual environments such as Artsteps can enhance individual skills and support the participation of those with motor difficulties. This promotes a more positive perception of their abilities and their role in the group (Canevaro, 2010).

This perspective aligns with the notion that customised collaborative work fosters stronger identity development and more meaningful social relationships, providing students with a sense of belonging to a learning community (Florian & Black-Hawkins, 2011). Thanks to its flexibility, the digital environment can offer further participation opportunities, enabling students with disabilities to contribute in personalised ways with fewer physical limitations (Selwyn, 2016).

Another objective of the research is to consider the teachers' point of view. Understanding how teachers perceive the approach's effectiveness and sustainability is essential for assessing its overall impact and possible transferability to other school contexts. Teachers' views can provide valuable insights into the observed benefits in the class group and critical issues encountered when using cooperative methodologies and digital environments together (Hennessy et al., 2022).

In summary, the research aims to collect empirical evidence to inform understanding of the pedagogical value of integrating cooperative strategies and creative digital tools in artistic learning environments. Firstly, the research aims to verify the extent to which these practices can support students' socio-emotional development by improving their motivation, self-esteem, and well-being (Deci & Ryan, 2000; Eccles & Roeser, 2011). On the other hand, the research aims to assess the inclusive potential of these practices, particularly with regard to students with special educational needs. The ultimate goal is to create a school that values differences and promotes participation for all (Booth & Ainscow, 2011; Florian, 2014).

1.1 Sample selection

The research was conducted in a lower secondary school and involved a total of 150 students, divided equally into two experimental conditions.
The experimental group consisted of 75 students who participated in an innovative teaching intervention based on collaborative learning integrated with the use of the Artsteps application.

The control group, consisting of a further 75 students, followed the traditional teaching activities provided for in the art curriculum.

Each group included three students with psychomotor disabilities, for a total of six participants. These conditions were documented on the basis of certifications issued pursuant to Law 104/1992, accompanied by clinical assessments and information provided by social and health services and school documentation. Students with disabilities took part in the activities through personalised interventions, in accordance with their Individualised Education Plans, and with the support of curriculum and support teachers (Ianes & Cramerotti, 2016). The selection of classes was based on organisational criteria and pre-intervention equivalence, with the aim of ensuring a homogeneous distribution in relation to:

- age group and year of study,
- section of belonging,
- presence of students with Special Educational Needs (OECD, 2023).

Assignment to the two experimental conditions was based on organisational feasibility, while safeguarding the heterogeneous composition of the groups in terms of individual abilities and characteristics, in line with methodological recommendations on collaborative learning (Johnson & Johnson, 2009).

Specific inclusion criteria were defined and applied, including:

1. Voluntary participation by students, following presentation of the aims, content and operating methods of the intervention (British Educational Research Association – BERA, 2018);
2. Informed consent expressed in writing by parents or legal guardians, authorising participation and the processing of data collected in accordance with current legislation (American Educational Research Association – AERA, 2011);
3. Certified diagnosis in the case of students with psychomotor disabilities, in order to document initial conditions and monitor participation in educational processes (World Health Organisation – WHO, 2011);
4. Participation in at least 50% of the planned activities, identified as the minimum threshold to ensure adequate exposure to the educational intervention (Shadish, Cook & Campbell, 2002).
5.

Students who:

- did not return their informed consent form,
- participated in less than half of the planned activities,
- had clinical conditions that limited their participation in the planned activities (AERA, 2011) were excluded from the research.

The entire data collection and processing process was conducted in compliance with current legislation on the protection of personal data (EU Regulation 2016/679 – GDPR) and ethical guidelines for research in school settings involving minors (BERA, 2018). Full privacy protection was guaranteed by anonymising the information collected, and participants were assured that they could withdraw from the project at any time without any consequences for their schooling.

1.2 Tools

To meet the research objectives, a mixed-methods approach was adopted, integrating quantitative and qualitative tools. This approach provides a comprehensive view of the phenomena under investigation, combining the analysis of psychometric dimensions with the observation of socio-relational dynamics in the school context (Creswell & Plano Clark, 2018).

In order to objectively assess the dimensions of perceived school wellbeing and overall self-esteem, two standardised psychometric tools were used, administered at two distinct points in the programme: before the start of the educational intervention (pre-test) and at the end of the intervention (post-test), in order to detect any changes attributable to the educational experience offered.
The Student Subjective Wellbeing Questionnaire (SSWQ) was used to measure students' subjective school wellbeing, understood as a positive perception of the school experience and their emotional experiences within the school context.

More specifically, the questionnaire investigates four fundamental dimensions of school wellbeing:
1. School Satisfaction: concerns the general sense of satisfaction with school, the educational environment and relationships with classmates and teachers. (Renshaw et al., 2015; Zadworna et al., 2022)
2. Joy of Learning: refers to the experience of positive emotions and interest in learning processes, the pleasure of schoolwork and discovery (Renshaw & Arslan, 2016).
3. Sense of belonging and connection (School Connectedness): includes the perception of feeling part of the school community, of being listened to, supported and connected to classmates and teachers (Renshaw et al., 2015; Zadworna et al., 2022).
4. Academic efficacy: refers to the perception of oneself as competent in coping with school demands, knowing how to complete tasks, contributing positively and succeeding in one's learning experience (Renshaw & Chenier, 2018; Serrão et al., 2024).
These four components were confirmed in the factorial structure of the questionnaire, and there is evidence of their adaptability and validity in different cultures and contexts (Renshaw et al., 2015; Zadworna et al., 2022). The SSWQ is therefore an appropriate tool for assessing well-being dimensions specific to the 10–14 age group and lower secondary school (Zadworna et al., 2022).

Overall self-esteem was measured using the Rosenberg Self-Esteem Scale (RSES), one of the most widely used and validated tools for assessing self-perception (Rosenberg, 1965). The scale measures the degree of respect and consideration that individuals have for themselves, which is a crucial element in pre-adolescent identity formation.
The RSES measures the following in particular:
- sense of personal worth, i.e. perception of oneself as a worthy and capable person;
- positive or negative self-assessment of one's qualities, i.e. the extent to which students believe they possess valid characteristics and abilities compared to their peers.
- the level of self-acceptance, i.e. the extent to which an individual recognises and reconciles with their own limitations and strengths, and perceives themselves as a complete and integrated person.
The dynamics of collaboration, active participation, and mutual aid were investigated using structured observation grids developed based on established cooperative learning models (Johnson & Johnson, 2009; Gillies, 2016). Teacher-observers used these grids at various points during the teaching programme to enable the systematic analysis of variables such as the quality of peer interactions, the level of participation in activities, how students exchanged support, how conflicts within the group were managed, and how individuals contributed to achieving common goals.
The observations were conducted in a non-intrusive manner during the laboratory phases to capture real group dynamics, paying particular attention to inclusiveness, reciprocity, and the co-construction of knowledge. To ensure the reliability and consistency of the findings, the observers received specific training and used a standardised version of the grid to minimise

differences between evaluators (Miles, Huberman & Saldaña, 2014). At the end of the intervention, semi-structured interviews were conducted with the art and support teachers involved. These aimed to explore the teachers' perceptions of the programme's effectiveness, critical issues encountered, impact on students with and without disabilities, potential of the Artsteps digital environment, and transferability of the model to different contexts. The semi-structured format allowed for a combination of a thematic guide and the exploration of unexpected aspects that emerged from free narration (Kvale & Brinkmann, 2015). The interviews, which lasted approximately 30–45 minutes, were recorded and transcribed in full, and the data were analysed using thematic analysis in line with the most established qualitative procedures (Braun & Clarke, 2006).

1.3 Activities

The educational intervention was designed and implemented over eight weeks as part of the Art curriculum, with two meetings taking place each week.
The overall objective was to promote meaningful learning on the themes of the Olympics and the educational values of sport, such as commitment, perseverance, respect, loyalty and resilience, by integrating an artistic dimension, digital technology and cooperative work. With this in mind, two distinct paths were prepared for the sample and control groups to allow a systematic comparison between innovative and traditional teaching methods.
The sample group incorporated collaborative learning activities and immersive digital environments. Recent studies have shown that cooperative learning promotes metacognition, positive interdependence and active involvement (Gillies, 2016; Johnson, Johnson & Smith, 2014), and that using digital tools to support creative expression increases motivation, sense of agency and belonging (Hennessy et al., 2022).

1) Introduction to the project and the values of sport
The first phase began with the teacher presenting the project and its educational objectives. Through guided brainstorming activities and the analysis of sports images and videos about the Olympics, the students developed a shared understanding of sporting values.
This initial phase stimulated curiosity and participation, as well as activating prior knowledge, in line with active learning methodology recommendations (Prince, 2004; Freeman et al., 2014).

2) Formation of cooperative groups
Students were subsequently divided into heterogeneous groups according to the following criteria: gender; performance; digital skills; and the presence of students with psychomotor disabilities.
This approach is based on the principles of cooperative learning, whereby diversity within groups fosters constructive dialogue, encourages peer tutoring, and nurtures the development of social and interpersonal skills (Johnson & Johnson, 2009; Slavin, 2014).
Each student was assigned a specific role (facilitator, researcher, designer or speaker), as recommended in literature on defining functional roles to encourage individual accountability and equal participation (Cohen & Lotan, 2014).

3) Content research and selection
During the third stage, each group examined historical, cultural and iconographic materials related to the Olympics and sport.
They consulted articles, images, videos and works of art, selecting relevant content to include in the virtual exhibition.

This activity helped to develop information retrieval and critical evaluation skills, which are key competencies in contemporary literacy (Hobbs, 2016).

4) Individual and group artistic production
The students created graphic works inspired by the values of the Olympics. These products included drawings, collages, reworked photographs and digital art, and were both individual and collective.
Students with psychomotor disabilities were able to use digital assistive technology to ensure full accessibility (Al-Azawei, Serenelli & Lundqvist, 2016).
The production phase, which included moments of collective review, encouraged discussion and responsibility for developing shared content (Sawyer, 2011).

5) Introduction to the Artsteps environment
This phase involved training in how to use Artsteps, a platform for creating virtual 3D exhibitions.
Students learnt how to create virtual spaces, upload and position works of art, and add text and multimedia content.
Using immersive environments is consistent with studies that emphasise the motivational, engaging and developmental benefits of 3D technologies for visual-spatial and narrative skills (Radianti et al., 2020).

6) Construction of the virtual exhibition
The groups then co-designed the thematic sections of the digital exhibition. This phase required negotiation, problem-solving and shared decision-making skills — processes considered central to cooperative learning (Roseth, Johnson & Johnson, 2008). Teachers provided strategic support in managing conflicts and synthesising proposals.

7) Revision, publication and final presentation
During the final stage, the students revised the exhibition, correcting errors and ensuring consistency across the different sections.
The final presentation enabled them to demonstrate their individual and collective contributions, thereby strengthening their sense of self-efficacy and belonging (Deci & Ryan, 2000; Bandura, 1997).
This was followed by a debriefing session to promote awareness of the processes involved and what was learnt (Schön, 1983; Kolb, 2015).
The path followed by the control group was designed to mirror traditional teaching methods, allowing for a systematic comparison with the innovative approach reserved for the experimental group. In line with what has been observed in the literature, transmissive and individual teaching tends to focus on the delivery of content rather than on the active processing of that content by students (Hattie, 2023; Marzano, 2017).

Phase 1 — Frontal lesson
The teacher introduced the history of the Olympics and the educational values of sport by delivering lectures and providing brief oral explanations, static presentations and paper-based worksheets for further study.
The prevalent use of the expository method reflects a conception of learning centred on the transmission of knowledge from teacher to student (Kirschner, Sweller & Clark, 2006), in which the class plays a passive and receptive role (Mayer, 2020).
While this approach ensures clarity of content, it limits active engagement and peer interaction (Murphy et al., 2018).

Phase 2 — Guided image analysis
Subsequently, the teacher guided the class in observing a selection of images, including photographs, official Olympic posters and sports-themed artwork.
The analysis was conducted through stimulus questions and brief group discussions, following a teacher-centred dialogue model (Alexander, 2020).
However, participation remained predominantly spontaneous and unmediated by cooperative structuring, which, according to the literature, can limit the potential for shared exploration and social construction of meaning (Mercer, Hennessy & Warwick, 2019).

Phase 3 — Individual artistic production
In the next phase, each student created an individual piece of artwork inspired by an Olympic value, using traditional techniques such as drawing, collage and painting.
Although working individually promotes concentration and autonomy, it reduces opportunities for learning through discussion and mutual support with peers (Bruner, 1996; Sawyer, 2022).
Students with disabilities received personalised support to ensure accessibility, in line with recommendations for inclusive education (Florian & Black-Hawkins, 2011).

Phase 4 — Traditional sharing and evaluation
At the end of the assignment, some students presented their work to the class and explained their thematic and aesthetic choices. The teacher's assessment was conducted using traditional criteria focused on commitment, thematic accuracy, and execution (Brookhart, 2017).
However, there were no structured opportunities for self-assessment or metacognitive reflection, despite these being recognised in recent literature as useful for enhancing awareness and self-regulation (Nicol & Macfarlane-Dick, 2006; Panadero, 2017).
In this course, the relational dimension was not the subject of any structured intervention and learning mainly took place in an individual capacity, in line with the traditional teaching model (Marzano & Toth, 2020).

2. Data Analysis

2.1 Quantitative data analysis

Analysing the quantitative data collected through the pre- and post-test administration of the Student Subjective Wellbeing Questionnaire (SSWQ) and the Rosenberg Self-Esteem Scale (RSES) enabled us to evaluate the impact of the educational intervention on students' school wellbeing and self-esteem. The scores were processed using descriptive statistics and inferential analysis (Shadish, Cook & Campbell, 2002) to verify any significant variations attributable to the integration of collaborative learning and the use of the Artsteps platform (Hennessy et al., 2022).
Significant increases were observed in all four dimensions measured by the SSWQ in the sample group exposed to the innovative intervention. School satisfaction increased by an average of +18%, indicating a more positive perception of the overall school experience. This is consistent with the hypothesis that active involvement strengthens school well-being (Slavin, 2014; Wentzel, 2017). Joy in learning increased by 22%, suggesting greater emotional and cognitive engagement in learning processes, as observed by Renshaw and Arslan (2016). The sense of school connectedness increased by +15%, indicating a strengthened sense of belonging to the class community, which is consistent with findings in the literature (Zadworna et al., 2022). Perception of academic self-efficacy increased by +12%, confirming the role of cooperative activities in fostering confidence in one's abilities (Bandura, 1997; Renshaw & Chenier, 2018).
In the control group, changes were limited: school satisfaction increased by 3%, and enjoyment of learning by 2%. Meanwhile, school connectedness and academic efficacy remained virtually

stable, increasing by 1% and 2% respectively. These results confirm that perceptions of school well-being tend to remain stable in the absence of collaborative digital intervention (Marzano & Toth, 2020; Hattie, 2023).

The intervention also had a significant impact in terms of the Rosenberg Self-Esteem Scale: the sample group recorded an average increase of 16% between the pre- and post-tests, while the control group showed an insignificant increase of 3%. The improvement observed in the experimental group reflects a strengthening of personal value and perception of one's own skills, supported by active participation and enhancement of individual contributions (Deci & Ryan, 2000; Bandura, 1997).

A specific analysis of students with psychomotor disabilities shows similar trends, with above-average increases in the sample group in terms of school connectedness (+20%) and self-efficacy (+18%). This suggests that the use of digital tools and inclusion in heterogeneous cooperative groups may have encouraged participation, the perception of inclusion and recognition of one's own contribution (Canevaro, 2010; Florian & Black-Hawkins, 2011; Selwyn, 2016).

Overall, the results clearly show differences between the two groups: while the sample group recorded increases of between 12% and 22% in the investigated dimensions, the control group fluctuated between 1% and 3%, indicating substantial stability in perceptions of well-being and self-esteem. These outcomes confirm the effectiveness of integrating collaborative learning (Johnson & Johnson, 2009; Gillies, 2016) and the Artsteps digital environment in improving school well-being, self-efficacy and self-perception among lower secondary school students, with particularly significant implications in terms of inclusion (Booth & Ainscow, 2011; Florian, 2014).

2.2 Qualitative data analysis

Qualitative analysis was conducted through examination of observation grids used during laboratory activities, as well as through semi-structured interviews with art and support teachers. This allowed an in-depth examination of the intervention's contribution to relational and collaborative dynamics, and enabled identification of professional perceptions regarding the effectiveness of the methodologies used. This was in line with the research objectives (Braun & Clarke, 2006; Creswell & Plano Clark, 2018).

The observational data relating to the sample group showed a clear increase in the quality of peer interactions, active participation, and mutual support dynamics. Students demonstrated greater ability to negotiate shared decisions, take the initiative, and distribute operational responsibilities within groups. This gave rise to frequent instances of mutual tutoring and task-related communication. These results appear to align with literature associating cooperative learning with positive interdependence, individual responsibility, and shared knowledge construction (Johnson & Johnson, 2009; Gillies, 2016). Defined roles within groups helped maintain participatory balance, reducing the risk of marginalisation and promoting awareness of one's own skills (Cohen & Lotan, 2014). In the control group, where no structured cooperative learning activities were provided, interactions were more sporadic and mainly limited to the final sharing phase. Participation remained predominantly individual, with mutual support limited to the odd request. The absence of collaborative roles and the lack of intention to co-construct resulted in reduced socio-relational involvement, which is consistent with teaching models centred on frontal transmission and individual responsibility (Kirschner, Sweller & Clark, 2006; Mercer, Hennessy & Warwick, 2019). Furthermore, conflict management within the sample group tended to be more constructive. In the control group, where no structured forms of cooperative learning were provided, observations show more sporadic interactions, mainly limited to the final sharing phase. Participation remained predominantly individual, with mutual support limited to occasional requests. The absence of

collaborative roles and an intention to co-construct resulted in less socio-relational involvement, consistent with teaching models centred on frontal transmission and individual responsibility (Kirschner, Sweller & Clark, 2006; Mercer, Hennessy & Warwick, 2019). Furthermore, conflict management within the sample group tended to be more constructive, while in the control group, any differences were more frequently delegated to the direct intervention of the teacher. Semi-structured interviews with teachers largely corroborate the observations' findings. Those involved in the sample group described the integration of cooperative learning and Artsteps as an approach that increased student engagement, motivation and confidence, while also promoting more equitable participation, particularly among students with disabilities. Teachers emphasise that creating the virtual exhibition provided a genuine opportunity to develop individual skills and encourage collaboration, stimulating shared reflection on creative and decision-making processes (Wexler, 2019; Hennessy et al., 2022). Several teachers also recognised benefits for the classroom environment, including a reduction in competitive dynamics and an increase in mutual support (Roseth, Johnson & Johnson, 2008; Wentzel, 2017).

In contrast, teachers in the control group describe more heterogeneous student involvement and less active participation. While they noted a good level of attention during lectures, the teachers reported limited and less spontaneous peer interactions. This suggests that the traditional approach did not foster the development of collaborative dynamics (Hattie, 2023; Marzano & Toth, 2020). Furthermore, they highlight that students with disabilities were less able to demonstrate their skills than the sample group due to less structured integration spaces. Overall, the qualitative analysis suggests that integrating structured collaboration with creative digital tools, such as Artsteps, promotes socio-emotional skill development, strengthens peer support networks, and encourages inclusive participation, thus aligning with the research objectives. The differences observed between the two groups, confirmed by the direct experience of teachers, highlight the transformative potential of the proposed model compared to traditional transmissive approaches, reinforcing the pedagogical value of the intervention in terms of both relationships and inclusion (Booth & Ainscow, 2011; Eccles & Roeser, 2011; Florian, 2014).

3. Discussion

The results of the quantitative and qualitative surveys show that integrating collaborative learning and using Artsteps in art education has significantly improved school wellbeing, self-esteem, and interpersonal dynamics among lower secondary school students. The observed increases in the dimensions of the Student Subjective Wellbeing Questionnaire, particularly school satisfaction, joy in learning, and a sense of belonging, are consistent with literature recognising collaborative approaches as a factor in promoting active involvement and a positive classroom climate (Slavin, 2014; Wentzel, 2017; Gillies, 2016). In the sample group, greater participation in and contribution to decision-making processes fostered a sense of agency and increased perceived self-efficacy, in line with Bandura's (1997) socio-cognitive perspective.

Improvements in self-esteem, as measured by the Rosenberg Self-Esteem Scale, suggest that the collaborative creation of digital exhibitions offered a valuable opportunity for personal and social growth. This process appears to have been activated primarily through two factors: the opportunity to take on tangible responsibility within the group, and the recognition of one's contribution in public. The literature emphasises that feelings of competence, autonomy, and relatedness are key elements in motivational and identity processes (Deci & Ryan, 2000). The results suggest that the intervention acted synergistically on these dimensions, promoting a more pronounced perception of personal value than in the control group. The control group, which worked mainly individually and used traditional teaching methods, did not experience

the same level of socio-emotional involvement. This confirms what has been reported in the literature about the limitations of teaching models focused on content transmission (Kirschner, Sweller & Clark, 2006; Marzano & Toth, 2020).

Triangulation of qualitative data confirms and enriches these findings. Classroom observations demonstrate that structuring roles within groups, alongside processes of negotiation and mutual tutoring, has fostered deeper relational dynamics. This has contributed to an increase in active participation and peer support (Johnson & Johnson, 2009; Roseth, Johnson & Johnson, 2008). Shared work aimed at creating a concrete, public product, such as a virtual exhibition, was a strong motivational driver as it made the value of each contribution and the need for effective collaboration clear and tangible. This amplifies the importance of an authentic learning context, which is recognised as facilitating engagement and deep understanding (Sawyer, 2022; Freeman et al., 2014).

One particularly significant aspect concerns students with psychomotor disabilities. For these students, the Artsteps platform not only represented an accessible environment, but also a means of expression and active participation, as it allowed them to interact with digital spaces and materials without physical limitations. This enhanced their individual skills and enabled them to participate in decision-making processes, fostering a positive perception of their role and promoting their integration into the group (Canevaro, 2010; Florian & Black-Hawkins, 2011; Selwyn, 2016). This confirms the importance of inclusive learning environments, which reduce barriers to participation and promote equal opportunities by combining collaboration and accessible technologies.

These findings are confirmed by interviews with teachers, who emphasised that the adopted approach has improved the classroom atmosphere, reduced competitive dynamics, and promoted greater participatory equity. Teachers also emphasised the educational value of work based on authentic tasks and cooperation mediated by digital tools, highlighting how this has strengthened students' metacognitive skills and sense of responsibility. However, some teachers noted critical issues related to the time required to manage groups and organise online activities, which demand careful planning and specific training for teachers and students alike (Hennessy et al., 2022).

Overall, the results suggest that integrating cooperative methodologies and digital tools promotes the development of transversal and socio-emotional skills and constitutes an effective inclusive strategy, offering real opportunities for participation and enhancement to students with disabilities. Experience suggests that, with proper design and support, this approach can promote a more equitable, participatory, well-being-oriented school in line with the principles of inclusive pedagogy (Booth & Ainscow, 2011; Florian, 2014; Eccles & Roeser, 2011).

Conclusions

This research highlights the pedagogical potential of integrating collaborative learning with the use of the Artsteps digital application in lower secondary school art education. The results show that this approach significantly improves well-being and self-esteem at school and fosters collaborative dynamics among students. This contributes to creating more inclusive, participatory educational environments that enhance individual skills (Gillies, 2016; Johnson & Johnson, 2009). Co-designing and creating virtual exhibitions also enabled students to play an active role in their learning, encouraging them to experiment with processes of agency and responsibility. This had a positive effect on their sense of belonging, competence and personal value (Deci & Ryan, 2000; Bandura, 1997).

The positive impact on students with psychomotor disabilities was particularly significant, as they found the digital environment accessible, flexible and meaningful, enabling them to contribute authentically to the group's work. This confirms that the intentional use of digital technologies can be an important tool for inclusion, facilitating participation and reducing the

physical and organisational barriers often present in traditional school contexts (Selwyn, 2016; Florian & Black-Hawkins, 2011). Therefore, the integration of collaboration and digital technology promotes a school that values differences and supports the development of positive personal and social identities, in line with the Index for Inclusion perspective (Booth & Ainscow, 2011).

The combination of quantitative and qualitative data strengthens the reliability of the results, indicating that collaborative environments supported by creative technologies enhance students' socio-emotional well-being by fostering stronger peer connections, mutual recognition, and shared meaning-making (Eccles & Roeser, 2011; Roseth, Johnson & Johnson, 2008). These findings emphasise the importance of promoting teaching approaches that go beyond content transmission, moving towards active, cooperative models that stimulate metacognitive and reflective processes (Freeman et al., 2014; Sawyer, 2022). Another important element is the motivational value that students attributed to the authentic task: creating a virtual exhibition produced a concrete, shareable outcome that gave meaning and purpose to individual and collective effort. This dimension appears to align with literature emphasising the effectiveness of approaches based on meaningful, production-oriented tasks in terms of both engagement and skills development (Wexler, 2019; Hennessy et al., 2022).

Despite the positive results, the study has some limitations. Firstly, the eight-week intervention period does not allow for an assessment of the long-term effects or stability of learning. Longitudinal interventions could help clarify the persistence of the observed outcomes and how they evolve over time (Shadish, Cook & Campbell, 2002). Furthermore, implementing innovative approaches requires the training of teaching staff, investment in technological resources, and the reorganising of teaching times and spaces. These factors can limit the feasibility of such approaches in school practice (Hennessy et al., 2022). A further critical issue concerns the selection of the sample, which was not randomised due to organisational requirements. This calls for caution when generalising the results (AERA, 2011). Looking ahead, it would be useful to extend the research to other disciplinary contexts and a larger number of institutions to verify its transferability and comparability. Additional dimensions that were not investigated in this study should also be explored, such as emotional regulation, the development of advanced digital skills, and the impact on intrinsic motivation. This will help us to fully understand the transformative potential of the proposed approach (Deci & Ryan, 2000; Selwyn, 2016). Finally, systematic training courses for teachers could encourage the wider adoption of innovative methodologies and support professional growth, consolidating practices based on collaboration and the critical use of technologies (Hennessy et al., 2022).

In conclusion, the integration of collaborative learning and creative digital tools is a promising way to promote well-being, self-esteem and inclusion in contemporary schools. Co-constructing digital artefacts, such as virtual exhibitions, enriches educational processes and offers students meaningful opportunities for expression, reflection and participation. This contributes to the construction of positive identities and stronger social relationships (Florian, 2014; Booth & Ainscow, 2011). This perspective enables us to propose an educational model that can respond to the needs of a complex society by valuing diversity and promoting the creation of collaborative, resilient, and forward-looking learning communities (Eccles & Roeser, 2011; Gillies, 2016).

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