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The Role of the Arts in the Classroom: Does Integration of the Arts Promote Social Relationships in the Classroom?

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Abstract: Positive social relationships between pupils are crucial for creating a conducive learning environment. Integrating the arts into classrooms fosters these relationships by promoting creative expression and social skills such as empathy, mutual support, and teamwork. Arts-based activities encourage collaboration, enabling pupils to develop creative solutions and appreciate diverse perspectives. Despite growing interest in this interdisciplinary approach, research on its impact on pupil relationships remains limited. This longitudinal study collected data from 381 pupils across five schools at two measurement points using standardized questionnaires to assess different dimensions of social relationships. Results indicated a significant increase in helpfulness and a reduction in discrimination among pupils who participated in several weeks of arts workshops. However, cliquishness and competitive thinking also increased, while aggressiveness remained unchanged regardless of group membership. These findings demonstrate the benefits of arts integration for fostering positive pupil relationships while highlighting the complex dynamics between creative learning environments and social interactions. The results underscore the need for targeted strategies to balance cooperation and competition effectively, ensuring that arts-based approaches maximize their potential to enhance classroom social dynamics.

Keywords: STEAM education; arts integration; social relationships; creativity; social competence; peer relations; arts-based teaching



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1. Introduction

There is growing recognition in both scientific discourse and pedagogical practice that positive social relationships among pupils are a cornerstone of creating a conducive learning environment (Hagenauer et al., 2021). These relationships are essential for fostering both cognitive and non-cognitive development in pupils (Reindl & Gniewosz, 2017). Strengthening social interactions and cultivating a supportive classroom climate represent effective, low-threshold strategies to promote positive pupil relationships during regular lessons (Reisch & Schwarz, 2004). An innovative approach to achieving this goal is integration of the arts into the classroom (Catterall et al., 2012; Langer & Körber, 2008). Within science and technology subjects, this interdisciplinary method is known as STEAM teaching (STEM + A), incorporating artistic elements to complement traditional STEM disciplines. The cooperative and interactive nature of STEAM education has demonstrated the potential to foster social skills and interactions in classrooms (Başaran & Bay, 2023). While extensive research has documented the benefits of arts-based approaches on pupils' motivation, self-efficacy, and academic performance (Lee et al., 2020), there remains a lack

of systematic studies addressing the impact of integrating the arts into regular lessons on social relationships between pupils (Taylor, 2020).

This study addresses this research gap by examining how arts integration in the classroom influences social relationships among pupils, thereby supporting a fundamental component of a positive learning environment. The study draws on Ryan and Deci's (2000) self-determination theory, focusing particularly on the role of social inclusion as a key factor influencing pupils' well-being and development.

1.1. Social Relationships in the School Context

Social relationships play a pivotal role in the school context, significantly influencing pupils' well-being and development (Hagenauer et al., 2021). Positive social relationships are typically characterized by mutual trust, respect, and emotional support (Argyle, 1992). In the school setting, these relationships, often termed peer relationships, refer to the daily interactions among pupils within a class (Ryan, 2001). The importance of fostering positive social relationships can be understood through self-determination theory, which identifies the basic psychological needs of autonomy, competence, and social inclusion as critical for intrinsic motivation and personal development (Ryan & Deci, 2000). Autonomy refers to the ability to make self-determined decisions and control one's actions. Competence involves the feeling of effectiveness and the ability to overcome challenges and develop skills. Social inclusion or relatedness pertains to the need for social acceptance, belonging, and support from others (Ryan & Deci, 2000). Arts integration in the classroom offers a unique opportunity to meet these needs, thereby enhancing pupils' social inclusion and enjoyment of the learning process (Ghukasyan & Gevorgyan, 2020; Howard et al., 2021).

In the artist-led workshops conducted in this study, the methodologically flexible and diverse approach allows students to follow their own interests and set personal learning goals, which addresses their need for autonomy. By using varied and engaging methods, students are encouraged to develop their abilities and talents, which fulfills their need for competence. Furthermore, the collaborative and creative nature of arts workshops promotes connectedness, providing opportunities for cooperation and exchange. This diverse approach to teaching ensures that students have more control over their learning, which leads to increased motivation and more positive learning environments (Soomro et al., 2023; Pratiwi et al., 2023). Arts-integrated teaching, therefore, fosters challenging yet achievable learning conditions for all students.

As the present study focuses on social relationships among students, the need for relatedness will be discussed in more detail in the following section. Social inclusion, specifically, encompasses the feeling of belonging and acceptance, which is essential for pupils' emotional well-being (Wentzel & Miele, 2009). Positive relationships among pupils fulfill this need by creating a sense of community and emotional support, contributing to a safe and welcoming learning environment (Furrer & Skinner, 2003). When students perceive their social relationships as supportive, they are more likely to engage in cooperative learning, share ideas, and provide help to their peers, thereby reinforcing the classroom's social cohesion and creating a supportive learning environment (Slavin, 2014).

The role of positive peer relationships is further reinforced by the research on cooperative learning. Studies indicate that structured cooperative learning activities promote positive interactions among peers, foster group cohesion, and encourage pro-social behaviors, such as helping and empathy (Johnson & Johnson, 2009). These activities allow students to experience mutual interdependence, which satisfies their need for relatedness and promotes a stronger sense of community (Slavin, 2014). In this context, arts integration stands out as a particularly effective method for facilitating cooperative learning and enhancing social relationships. Arts-based activities—whether through collaborative arts

projects, group performances, or shared creative tasks—naturally promote interaction, cooperation, and mutual respect, helping students form stronger social bonds and feel more included in the classroom community (Eisner, 2003).

1.2. Integration of the Arts in the Classroom

Integration of the arts into the classroom is a consciously designed approach to incorporating creative elements into the learning process, thus enriching content and promoting creativity (Hetland & Winner, 2001). Particularly in the STEAM area, which combines the arts with science, technology, engineering, and mathematics, this approach enables holistic and innovative learning experiences (Başaran & Bay, 2023). Researchers in the STEAM field emphasize the importance of the fluid boundaries between disciplines, such as between science and the arts or between mathematics and music, in order to promote creative problem-solving (Henrkisen et al., 2015). Educators are encouraged to integrate various artistic disciplines, such as visual arts, music, theater, and movement, to present complex knowledge through multisensory learning, fostering a creative synthesis of prior experiences and new insights (Henrkisen et al., 2015). Moreover, some studies emphasize the role of design in this context, not only as a tool for artistic expression but also as an economic driver, contributing to innovation and the creation of new products (Maeda, 2013). At the same time, artists often raise existential questions that provide critical orientation, helping students reflect on their own values and perspectives, thereby placing their creative skills within a broader and more meaningful context (Maeda, 2013). The combination of the arts and the design process thus offers students the opportunity to develop both innovative products and deepen creative thinking processes, which is crucial in transdisciplinary approaches to STEAM teaching (Mishra et al., 2011; Eisner, 2003). In addition to supporting cognitive development, arts integration also promotes social interaction, with collaborative projects and partnerships with professional artists helping to break down social barriers and cultivate a sense of community (Cross, 2001; Catterall et al., 2012).

Integration of the arts into classrooms not only enhances creativity and cognitive engagement but also creates a supportive environment for neurodivergent pupils, including those with ADHD, autism spectrum conditions, or mental health challenges (Gerber et al., 2024). The works of Gerber (Gerber et al., 2024) and Martin (Martin, 2009) on teaching students with special needs indicate that arts-based approaches foster multisensory learning, effectively addressing diverse sensory and cognitive needs. These approaches support pupils in regulating their emotions and engaging meaningfully in social interactions (Martin, 2009). Collaborative arts activities, in particular, have been shown to reduce feelings of isolation and foster a sense of belonging among neurodivergent pupils, fulfilling their need for relatedness as outlined in self-determination theory (Gerber et al., 2024). Furthermore, studies have demonstrated that structured arts activities can significantly enhance relationship skills (Martin, 2009). For example, Wohler (Wohler, 2013) and Regev (Regev, 2022) highlighted that arts-based activities promote focus and discipline, extending attention spans and improving impulse control among pupils with ADHD—skills essential for successful social interactions. Through the process of artistic creation, pupils with ADHD also learn to better regulate their emotions, which can reduce conflict and lead to improved social relationships (Wohler, 2013; Regev, 2022).

These findings emphasize the inclusive potential of arts integration in addressing diverse learning needs while fostering a supportive and harmonious social climate.

1.3. The Effect of Arts Integration on Social Relationships

Recent studies have begun to explore the influence of arts integration on social interactions. Research demonstrates that collaborative creative activities can significantly

strengthen social relationships among pupils (Catterall et al., 2012; Hetland & Winner, 2001). For instance, theater-based interventions have been shown to enhance empathy, communication skills, and tolerance while improving overall social interactions (Lewandowska & Węziak-Białowolska, 2023). Similarly, STEAM lessons have been linked to improved social skills and a stronger sense of classroom community (Başaran & Bay, 2023). Creative teamwork in arts-integrated teaching promotes social cohesion, as pupils bond through shared problem-solving, collaboration, and dialogue (Lee et al., 2020). This collaborative environment encourages interaction, helping to build stronger relationships and a sense of community within the classroom (Lewis, 2024). Moreover, arts-integrated lessons contribute to strengthening empathy among both students and teachers (Lewandowska & Węziak-Białowolska, 2020). This increased empathy is essential for creating a classroom climate that is emotionally supportive, inclusive, and conducive to effective learning (Martinsone & Žydzūnaite, 2023). When empathy is present, it enhances communication, reduces conflicts, and encourages a positive, collaborative atmosphere that supports academic and social growth (Lewis, 2024). Such activities also encourage the development of social and emotional skills that are vital for positive relationships (OECD, 2024).

To analyze the impact of arts integration on social relationships, this study uses the Landau Social Climate Scales (Saldern & Littig, 1987), which assess dimensions of cliquishness, helpfulness, aggression, discrimination, and competitiveness. These dimensions reflect the multifaceted nature of social dynamics within classrooms, allowing for a nuanced examination of both positive and negative effects.

Integration of the arts into the classroom has the potential to influence these dimensions in various ways. Each dimension can be shaped by specific mechanisms intrinsic to artistic activities, as outlined below.

Cliquishness: Arts projects can either reinforce existing social groups or disrupt them by encouraging new interactions. Collaborative artistic tasks often require students to work beyond their usual social circles, fostering connections that break down barriers. Conversely, shared artistic preferences or established group dynamics could strengthen pre-existing cliques. According to Taylor (2020), arts-based projects can encourage students to form new working partnerships, thereby changing group dynamics. Similarly, Burnaford et al. (2007) emphasized the role of interdisciplinary arts projects in creating diverse social links and fostering broader relational networks.

Helpfulness: The inherently collaborative nature of artistic endeavors fosters mutual support, as creative problem-solving often requires students to provide feedback and assistance to one another. By working towards shared goals, students learn to depend on and uplift their peers. DeMoss and Morris (2002) argue that arts-based education encourages students to contribute to each other's creative growth, reinforcing a sense of shared accomplishment and social cohesion.

Aggression: Artistic activities provide a constructive outlet for emotional expression, helping to diffuse potential conflicts and foster a peaceful classroom environment. Performing arts, such as theater and dance, are particularly effective in promoting empathy and emotional intelligence, which are essential for reducing aggression (Kisiel et al., 2006). The calming effects of creative tasks are particularly evident in supporting students with challenging behaviors, providing them with an outlet for emotional expression and self-regulation (Ghukasyan & Gevorgyan, 2020). Goldstein and Winner (2012) noted that engaging with artistic content improves perspective-taking abilities, thereby creating a calmer and more understanding classroom atmosphere.

Discrimination: The arts offer a platform to celebrate diversity and promote inclusion by breaking down social barriers and fostering mutual understanding. Collaborative projects often emphasize diverse perspectives, encouraging students to appreciate and

respect differences. [Rosa and Taddeo \(2022\)](#) described how arts programs reduce prejudices and enhance intercultural understanding. [White \(2018\)](#) further underscored the unique potential of arts education to cultivate appreciation for diversity, thereby strengthening the sense of community within classrooms.

Competitiveness: The impact of arts projects on competitiveness largely depends on their design. Collaborative arts projects focus on teamwork and reduce rivalry between individuals, while activities structured as competitions can increase competitive tendencies. On the one hand, creative work in arts workshops can diminish competitiveness and promote teamwork ([Lee et al., 2020](#)). On the other hand, challenges can also encourage competitiveness however, this can be addressed in the design of the arts workshop ([Li et al., 2022](#)).

These insights underscore the multifaceted influence of arts integration on classroom social dynamics. When intentionally designed, arts-based interventions can effectively shape these dimensions of the social climate, fostering an environment conducive to both personal and collective growth.

1.4. Research Aim and Hypotheses

This study aims to systematically examine how integration of the arts into regular lessons influences social relationships among pupils, addressing the following research question: Which aspects of social relationships among pupils can be influenced by integrating the arts into the classroom?

Based on the dimensions defined by [Saldern and Littig \(1987\)](#), the following hypotheses are proposed:

Hypothesis 1 (H1). *Integration of the arts reduces cliquishness among pupils.*

Hypothesis 2 (H2). *Integration of the arts promotes pupils' helpfulness.*

Hypothesis 3 (H3). *Integration of the arts reduces aggression among pupils.*

Hypothesis 4 (H4). *Integration of the arts reduces discrimination among pupils.*

Hypothesis 5 (H5). *Integration of the arts reduces competitiveness among pupils.*

This comprehensive framework allows for an in-depth investigation of the multidimensional effects of arts integration on pupils' social relationships within the classroom.

2. Materials and Methods

2.1. Intervention

This study integrates the arts into classrooms through artist-led workshops conducted during regular lessons. Over three school years, artists designed and implemented subject-specific workshops lasting 7–9 weeks annually. These workshops covered various curriculum topics, ensuring the content met educational standards and did not require additional teacher coverage. In the first project cycle (summer term 2022/23), all workshops were completed within one term, while in the second cycle (2023/24), they extended throughout the school year.

Artists specializing in theatre, improvisation, choral theatre, physical theatre, performance, music, radio, percussion, and dance led the workshops, allowing for a broad exploration of the effects of different forms of the arts on classroom dynamics. Each cycle culminated in a presentation of the workshop results, serving as a shared goal for participating pupils and teachers.

2.2. Sample

The longitudinal project involved five secondary schools, including grammar schools, comprehensive schools, and a special education school specializing in hearing and visual impairments. Seven classes participated in the intervention (trial group), while 11 served as a control group. A total of $N_{total} = 381$ pupils (average age: $M = 12.06$ years, $SD = 1.13$; 166 females, 177 males, 1 diverse, 37 gender is missing) participated, with $N_{trial} = 143$ (average age: $M = 12.11$ years, $SD = 0.96$, 63 females, 79 males, 1 diverse) in the trial group and $N_{control} = 201$ (average age: $M = 12.00$ years, $SD = 0.52$, 103 females, 98 males) in the control group.

Instruments

Quantitative data collection utilized an online questionnaire administered at two time points: March 2023 (t1) and June 2024 (t3). The questionnaire included the established Landau Social Climate Scales (Saldern & Littig, 1987), assessing cliquishness, helpfulness, aggression, discrimination, and competitiveness on a 5-point Likert scale. The items of these scales are presented in Table 1, while Table 2 provides descriptive statistics for the total sample and subgroups. The scales are established and have already been the subject of numerous examinations for the validation of measuring instruments for the social climate in classes (Maschke & Stecher, 2010; Müller, 1997; Saldern, n.d.). Trained research staff were available during questionnaire administration to assist with clarifications. Pupils were informed of the voluntary and anonymous nature of participation beforehand.

Table 1. Questionnaire items.

Variable	Item
Cliquishness	There are groups in our class that only work for themselves. There are different groups in our class that don't want to have anything to do with each other.
Helpfulness	If I want to work with someone, I can quickly find someone in the class. Most class members are helpful.
Aggression	There are also hostilities among the classmates. Certain pupils in the class often pick fights.
Discrimination	Certain pupils receive little recognition from the class. I don't feel like I belong to the class community.
Competitiveness	Envy is widespread in our class. Most people in our class are only interested in getting good grades.

Table 2. Descriptive statistics of the dimensions.

Variable	Nto	Nt1 Ntr	Nco	Nto	Nt3 Ntr	Nco
Cliquishness	314	120	194	324	119	205
Helpfulness	314	119	195	321	118	203
Aggression	314	120	195	321	118	203
Discrimination	314	120	194	321	118	203
Competitiveness	311	117	194	321	118	203
	Mto	Mean (SD) t1 Mtr	Mco	Mto	Mean (SD) t3 Mtr	Mco
Cliquishness	2.27 (1.14)	1.97 (1.25)	2.46 (1.02)	2.41 (1.08)	2.32 (1.16)	2.46 (1.03)
Helpfulness	1.24 (0.96)	0.92 (0.95)	1.44 (0.91)	2.52 (1.03)	2.37 (1.04)	2.61 (1.02)
Aggression	2.19 (1.15)	2.19 (1.21)	2.19 (1.12)	2.06 (0.64)	1.94 (0.72)	2.13 (0.58)
Discrimination	2.06 (1.11)	2.58 (1.10)	1.74 (1.00)	1.62 (0.87)	1.51 (0.99)	1.68 (0.78)
Competitiveness	2.08 (0.93)	1.83 (0.96)	2.23 (0.88)	1.86 (0.95)	1.98 (0.89)	1.79 (0.98)

Note: to = total sample, tr = trial group, and co = control group.

2.3. Analysis

Data pre-processing involved checking for missing values. As the missing values (15–20%) were not significantly patterned (Little’s MCAR test: $\chi^2(460) = 406.210$, $p = 0.966$), no imputation was performed.

Five linear mixed-effects models were estimated, one for each dimension of pupil relationships. The primary focus was on the interaction effect between time (t1, t3) and intervention (trial vs. control group). The models accounted for nested data structures (school, classroom, pupil levels) and were estimated in RStudio (Version 2024.09.0+375, R 4.2.2) using the lme() function from the nlme package (Version 3.1-160). The data presented in this study are available upon request from the corresponding author. Due to the consent forms having been signed by the parents, which restrict data availability to ensure the privacy and confidentiality of their children, the data cannot be made fully accessible to the public.

The hypotheses (H1–H5) were tested through first-order interaction terms in Models 1–5. Additionally, the main effects were analyzed to identify general trends over time across groups.

3. Results

To determine the influence of context, intra-class correlation (ICC) values were calculated separately for each dimension of pupil relationships at the various levels. These values are summarized in Table 3. The ICC values were consistently very low across all levels, suggesting that context effects are unlikely.

Table 3. Intra-class correlation.

	School	Class	Pupils
Cliquishness	18%	3%	0%
Helpfulness	8%	1%	0%
Aggression	1%	10%	0%
Discrimination	8%	1%	0%
Competitiveness	7%	3%	11%

3.1. Main Effects

3.1.1. Time

The main effect of time evaluates whether significant changes occurred in the dimensions of pupil relationships between the two points of data collection. No significant main effect of time was found for cliquishness (Table 4, Model 1), aggressiveness (Table 4, Model 3), discrimination (Table 4, Model 4), or competitiveness (Table 4, Model 5), indicating no average change in these dimensions across the overall sample. However, a significant positive main effect was observed for helpfulness ($B = 1.173$, $p < 0.001$; Table 4, Model 2), indicating an increase in helpfulness during the study.

Table 4. Linear mixed-effects models.

Model	Est.	S.E.	p-Value	t-Value	DF	AIC	BIC
1: Clique formation						1887.86	1923.48
Intercept	2.087	0.290	0.000 ***	7.203	350		
Time	0.010	0.103	0.926	0.094	269		
Intervention	−0.143	0.247	0.573	−0.581	11		
Time–Intervention	0.351	0.168	0.037 *	2.094	269		
2: Helpfulness						1764.94	180.54
Intercept	1.27	0.210	0.000 ***	6.04	349		
Time	1.173	0.094	0.000 ***	12.501	269		
Intervention	−0.291	0.191	0.156	−1.523	11		
Time–Intervention	0.304	0.153	0.049 *	1.98	269		

Table 4. Cont.

Model	Est.	S.E.	p-Value	t-Value	DF	AIC	BIC
3: Aggression						1692.24	1727.844
Intercept	2.232	0.187	0.000 ***	11.912	349		
Time	−0.058	0.088	0.509	−0.662	269		
Intervention	−0.068	0.229	0.773	−0.296	11		
Time–Intervention	−0.211	0.144	0.145	−1.463	269		
4: Discrimination						1742.41	1777.99
Intercept	1.884	0.175	0.000 ***	1.748	348		
Time	−0.059	0.093	0.524	−0.638	269		
Intervention	0.662	0.167	0.002 **	3.954	11		
Time–Intervention	−1.029	0.152	0.000 ***	−6.79	269		
5: Competitiveness						1701.82	1737.37
Intercept	2.038	0.195	0.000 ***	1.43	349		
Time	−0.425	0.085	0.000 ***	−5.029	265		
Intervention	−0.191	0.194	0.345	−0.986	11		
Time–Intervention	0.544	0.139	0.000 ***	3.911	265		

Note: *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$. Time: the pre-test and post-test factor indication. Intervention: indication of whether the group received the workshop or not (trial vs. control group).

3.1.2. Intervention

The main effect of intervention examines whether the trial and control groups differ significantly on average across all time points. A significant difference was observed only for discrimination ($B = 0.662$, $p < 0.01$; Table 4, Model 4), with the trial group showing higher levels of discrimination compared with the control group. No significant differences were found for cliquishness (Table 4, Model 1), helpfulness (Table 4, Model 2), aggressiveness (Table 4, Model 3), or competitiveness (Table 4, Model 5).

3.2. Interaction Effects

The interaction effect of time and intervention investigates whether changes in pupil relationship dimensions over time differ between the trial and control groups. A significant interaction effect was found for cliquishness ($B = 0.351$, $p < 0.05$; Table 4, Model 1), indicating that cliquishness increased more in the trial group compared with the control group, contradicting Hypothesis 1. For helpfulness, the interaction effect was significant ($B = 0.304$, $p < 0.05$; Table 4, Model 2), supporting Hypothesis 2, as helpfulness increased more in the trial group than in the control group. No significant interaction effect was observed for aggressiveness (Table 4, Model 3), whereby refuting Hypothesis 3.

Discrimination showed a significantly negative interaction effect ($B = -1.029$, $p < 0.001$; Table 4, Model 4), indicating a greater decrease in the trial group, confirming Hypothesis 4. Finally, a significant positive interaction effect was found for competitiveness ($B = 0.554$, $p < 0.001$; Table 4, Model 5), contradicting Hypothesis 5, as competitiveness increased more in the trial group compared with the control group.

4. Discussion

The present study examined the influence of arts integration on pupils' relationships, particularly with regard to cliquishness, helpfulness, aggressiveness, discrimination, and competitiveness. The results show a differentiated effect of this method, which may be due to the complexity of social dynamics in classes.

The significantly stronger increase in helpfulness in the trial group over the course of the project confirms Hypothesis 2 and is in line with the literature, which states that joint artistic activities can foster a sense of belonging and strengthen mutual support between pupils (Hagenauer et al., 2021; Catterall et al., 2012). Creative collaboration in particular can break down social barriers and create an environment in which pupils are more willing to help because they feel part of a supportive community (Johnson & Johnson, 1999).

In terms of aggressiveness, there were no significant changes, which refutes Hypothesis 3. This finding contradicts some studies that argue that creative and cooperative learning approaches, such as integration of the arts, can positively influence behavior and reduce conflict (Catterall et al., 2012; Furrer & Skinner, 2003). It is possible that external factors play a role here, such as individual personality traits, which continue to influence aggressiveness in school contexts and could only be reduced to a limited extent by the intervention (Hagenauer et al., 2021).

The development in the dimension of discrimination is exciting. Although the trial group showed higher levels of discrimination at the beginning of the project, there was a significant decrease in these levels over the course of the project, which supports Hypothesis 4. Such results are comparable to the findings of Catterall et al. (2012) and Hetland and Winner (2001), who argue that collaborative creative work fosters empathy and can reduce social distance. Working with artists seems to reduce prejudice by helping pupils to better appreciate the diversity within the group, thus actively reducing discrimination.

Contrary to H1, cliquishness increased more in the trial group than in the control group over the course of the project. Similarly, H5 was rejected, as competitive thinking also increased in the trial group. These results may be explained by the dynamics observed in project-based learning settings with 21st century skills. Studies (Eisner, 2003; Hetland & Winner, 2001) show that fostering creativity and social interaction within project-based tasks, on the one hand, promotes collaboration and creative exchange but, on the other hand, can unintentionally lead to the formation of cliques and increased competitiveness. Social and creative activities in group projects create an environment in which pupils form closer relationships while also striving for personal recognition and creative expression within the group. The increased social interaction and the need for individual positioning can lead to more intense cliquishness and increased competitiveness, especially when creative contributions are visible and can be evaluated (Henrkisen et al., 2015; Maeda, 2013).

In conclusion, the findings indicate the importance of integrating the arts, which can have different effects depending on the dimension of the pupils' relationships. They confirm the assumptions of the self-determination theory (Ryan & Deci, 2000) in some areas, according to which the feeling of social inclusion has a significant influence on pupils' well-being and behavior, while other dimensions may require more intensive, differentiated interventions to achieve similar effects. These results highlight the ambivalence of creative learning approaches and emphasize the need for targeted guidance to promote a balance between collaborative learning and a healthy competitive culture.

In practice, this means that integrating the arts into the classroom plays an important role in promoting social relationships, but requires differentiated approaches. In particular, greater focus should be placed on promoting helpfulness and reducing discrimination through creative collaboration. Teachers could maximize the positive effects of integrating the arts by actively encouraging not only creative exchange but also social dialogue within groups through targeted instruction. In doing so, it is important to create an environment in which pupils can develop a sense of belonging without excessive cliquishness or unhealthy competition. Targeted management of group structures and conscious support for teamwork could help to minimize these negative effects (Hagenauer et al., 2021). In addition, teachers should pay attention to how creativity-related competitions and recognition are designed within arts projects to avoid them being perceived as promoting competition and social exclusion (Bell, 2010).

The results suggest that the social dynamics triggered by integration of the arts into the classroom need to be considered in a more differentiated way. In particular, aspects such as gender, age, and socio-economic background could be included more in the analysis. Future research could also examine the long-term effect of integrating the arts into the classroom

on pupils' social relationships to find out whether the observed changes also manifest themselves in the long term. It would be particularly interesting to examine the influence of integrating the arts into the classroom on different age groups or in different cultural contexts. For example, it could be examined whether the positive effect of integrating the arts to increase helpfulness and reduce discrimination can also be demonstrated in other educational settings, such as vocational schools. Additionally, future studies could consider alternative scales to capture school climate and social dynamics more comprehensively. Constructs such as the sense of security, as discussed in the recent work of Huber and Helm (Huber & Helm, 2024), offer valuable insights into students' emotional well-being and sense of belonging. Moreover, scales measuring pro-social and anti-social behavior could provide a more nuanced understanding of both positive and negative interactions among students (Martínez-Gregorio et al., 2023). Incorporating these measures would allow for a broader perspective on the impact of arts integration, particularly with regard to students' emotional and behavioral development.

Furthermore, future research could further analyze the role of teachers as moderators and the specific design of integration of the arts into the classroom. To what extent different teaching methods or the influence of external artists change the social climate in the classroom is another aspect that should be explored in more depth. The associated dimensions of pupils' relationships (such as cooperation, helpfulness, and discrimination) and the type of arts integration (e.g., individual projects vs. group work) could also be examined more closely. An integrative approach that combines the arts, social interaction, and cognitive learning processes could serve as a model for future studies.

While the quantitative approach of this study provides important insights into the measurable effects of arts integration on pupils' social relationships, incorporating a mixed-methods design could offer a more nuanced interpretation of these effects. Qualitative interviews with pupils and teachers, for instance, might reveal subjective experiences and emotional responses to arts-based activities that are not captured by standardized measures.

Exploring the interactions between integrating the arts into the classroom and other learning methods, such as project-based learning (PBL) or inquiry-based learning, also offers great potential for further developing educational strategies that not only promote subject knowledge but also focus on pupils' social and emotional learning. Future studies could examine in detail how project-based learning combined with arts integration affects long-term learning outcomes and social skills.

5. Limitations

One major limitation of this study is the lack of randomized allocation of classes to control and trial groups, which affects the quasi-experimental design and potentially impacts the comparability of the groups. This lack of randomization introduces the possibility of bias and may distort the results. Additionally, the reliance on self-assessment data requires a certain degree of pupil reflectiveness, which could be influenced by factors such as language barriers or varying levels of self-awareness.

Another limitation is the specific school environment in which the study was conducted, restricting the generalizability of the results to other educational institutions or age groups. The arts integration in this study was focused on science subjects and geography, raising the possibility that the effects observed here may not translate to other subjects or instructional approaches.

Furthermore, this study employs a predominantly quantitative research design. While this approach is effective in identifying patterns and correlations, it may not fully capture the nuanced perspectives and lived experiences of individual pupils and educators. To address this, we have conducted additional qualitative interviews with teachers, which

aim to provide deeper insights into the ways arts integration influences social relationships and classroom behavior on a personal level. A separate contribution based on the analysis of these qualitative data is currently in preparation.

Initial analyses of the qualitative teacher interviews revealed that all educators reported an increase in pupils' sense of self-efficacy and an improvement in the classroom climate. Notably, a non-cognitive learning gain was observed among students, including enhanced concentration, attention, and independence. Pupils who typically remained in the background also contributed more actively during this type of teaching. The creative approach, through role-playing and dramatic presentations, fostered both creativity and social interaction. The project's impact on the classroom climate was particularly evident in certain classes, where students demonstrated greater cohesion and fewer conflicts, leading to a positive shift in the distribution of roles within the class. Of particular note was the increased integration of shy students and even a refugee child, who took on more responsibility and became more involved in the classroom community.

Moreover, the study was limited to the pupils' perspective. A more comprehensive analysis would include the views of teachers and parents to better understand the multidimensional effects of arts integration. The lack of these perspectives limits the scope of the conclusions drawn.

Finally, the study could benefit from more sophisticated or extended measurement tools to capture nuanced dynamics and address the aforementioned limitations. Future research should consider incorporating mixed-methods approaches and broader datasets to better understand the effects of arts integration across diverse educational settings.

6. Conclusions

In summary, this study provides valuable insights into the effects of integrating the arts into the classroom on pupils' social relationships within the school context. Most notably, creative collaboration significantly improved helpfulness and reduced discrimination among pupils, fostering a stronger sense of community. However, the findings also revealed unintended consequences, such as increased cliquishness and heightened competitiveness, highlighting the multifaceted and complex nature of social dynamics in artistically enriched learning environments.

The study makes a significant contribution to the existing body of research on the role of the arts in promoting social skills in education. It broadens our understanding of how creative learning approaches can either enhance or complicate social relationships among pupils, offering practical insights for designing arts-based teaching strategies. In the broader context of STEAM education and the promotion of social interactions in schools, this study provides a more nuanced perspective on the influence of the arts on social relationships.

Despite its contributions, the effects of integrating the arts into classroom settings remain a complex field requiring further exploration. Future research should investigate the long-term impacts of arts integration and include perspectives from teachers and parents to develop a holistic understanding of its influence on social dynamics. Additionally, expanding the sample to encompass different school types, subject areas, and age groups would enhance the generalizability of the findings and provide deeper insights into the interplay between creative teaching methods and social relationships in education.

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Institutional Review Board Statement: The study fully complied with Regulation (EU) 2016/679 (General Data Protection Regulation, GDPR) and the ethical standards set forth in the Declaration of Helsinki, ensuring that both institutional and parental consent were secured before the study began.

Informed Consent Statement: The study followed strict ethical protocols to protect the rights and privacy of the participants. Firstly, consent was obtained from all participating students and their parents, along with detailed documentation outlining the purpose of the data processing, the roles of the data controllers and the methods of processing. This also included provisions on the treatment of data for scientific research and the rights of participants under the GDPR, in particular the right to access and erasure of personal data under Articles 15 and 17.

Data Availability Statement: To minimize the amount of personal data collected, a pseudonymization process was implemented. All collected data were anonymized and subsequently handled in aggregate form for analysis, ensuring that no individual student could be identified from the results. Parents received an Information Notice for Personal Data Processing within Research Projects in accordance with Article 13 of EU GDPR. This document explained the data processing methods and purposes. Parents were asked to provide informed consent, acknowledging that they had read the notice and granting or denying permission for the processing of their child's data for the purposes outlined. They also had the option to authorize the use of their child's images for multimedia materials produced solely for research purposes. The data presented in this study are available on request from the corresponding author. Due to the consent forms signed by the parents, which restrict data availability to ensure the privacy and confidentiality of their children, the data cannot be made fully accessible to the public.

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