ART AS A TOOL FOR DEVELOPING EMOTIONAL INTELLIGENCE IN INCLUSIVE EDUCATION

A ARTE COMO FERRAMENTA PARA DESENVOLVER A INTELIGÊNCIA EMOCIONAL NA EDUCAÇÃO INCLUSIVA

EL ARTE COMO HERRAMIENTA PARA DESARROLLAR LA INTELIGENCIA EMOCIONAL EN LA EDUCACIÓN INCLUSIVA

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ABSTRACT: This study addresses the growing number of SEN students in mainstream schools and the need for effective EI development tools. The aim is to assess the combined creative and emotional development of SEN children through art-based methodologies and to evaluate their impact on EI. Methods included regression and correlation analyses, descriptive statistics, and systematization. Results show that the number of SEN students significantly influences the prevalence of inclusive schooling, while teacher workload and the share of out-of-school children correlate with inclusion levels. Ukrainian regions were clustered into groups with high and low inclusion rates. A negative relationship was found between enrollment in special institutions and the potential development of social and emotional competencies. Notably, higher participation in inclusive art practices was associated with increased EI, rising from 55.6 to 91.0 points.

KEYWORDS: Emotional Intelligence. Art. Development. Inclusive Education. General Secondary Education.

RESUMO*: Este estudo aborda o crescente número de estudantes com NEE em escolas regulares e a necessidade de ferramentas eficazes para o desenvolvimento da IE. O objetivo é avaliar o desenvolvimento criativo e emocional combinado de crianças com NEE por meio de metodologias baseadas em arte e analisar seu impacto na IE. Os métodos incluíram análises de regressão e correlação, estatística descritiva e sistematização. Os resultados mostram que o número de estudantes com NEE influencia significativamente a prevalência da escolarização inclusiva, enquanto a carga de trabalho docente e a proporção de crianças fora da escola correlacionam-se com os níveis de inclusão. As regiões da Ucrânia foram agrupadas em clusters com altas e baixas taxas de inclusão. Foi identificada uma relação negativa entre a matrícula em instituições especiais e o potencial de desenvolvimento de competências sociais e emocionais. Destaca-se que uma maior participação em práticas artísticas inclusivas esteve associada ao aumento da IE, que passou de 55,6 para 91,0 pontos.*

PALAVRAS-CHAVE*: Inteligência Emocional. Arte. Desenvolvimento. Educação Inclusiva. Educação Secundária Geral.*

RESUMEN*: Este estudio aborda el creciente número de estudiantes con NEE en escuelas regulares y la necesidad de herramientas eficaces para el desarrollo de la IE. El objetivo es evaluar el desarrollo creativo y emocional combinado de los niños con NEE mediante metodologías basadas en el arte y analizar su impacto en la IE. Los métodos incluyeron análisis de regresión y correlación, estadística descriptiva y sistematización. Los resultados muestran que el número de estudiantes con NEE influye significativamente en la prevalencia de la escolarización inclusiva, mientras que la carga laboral docente y la proporción de niños fuera de la escuela se correlacionan con los niveles de inclusión. Las regiones de Ucrania fueron agrupadas en clusters con altas y bajas tasas de inclusión. Se encontró una relación negativa entre la matrícula en instituciones especiales y el potencial de desarrollo de competencias sociales y emocionales. Cabe destacar que una mayor participación en prácticas artísticas inclusivas se asoció con un aumento de la IE, pasando de 55,6 a 91,0 puntos.*

PALABRAS CLAVE*: Inteligencia Emocional. Arte. Desarrollo. Educación Inclusiva. Educación Secundaria General.*

INTRODUCTION

The educational aspect of comprehensive secondary education is crucial to instill moral values and behavioral norms in youths. Character education programmers build in the intent and habit of common practices, such as responsibility or integrity or empathy which are the ground beneath all the social skills. At the same time, art education is described by many as an effective instrument that fosters the cultivation of students' emotional intelligence, which aids in the forming, understanding and managing of emotions as a direct contributor to character breeding.

A radical reconsideration of teaching and professional skills is called for by the educational environment of today, which in turn relates to an increasing heterogeneity in the students' education. Classrooms are more diversified at the present time and filled with children of different educational levels, literacy backgrounds, cognitive styles and emotional profiles than before. In this sense, there is a need of teachers who are not only academically-equipped but also emotionally balanced, empathetic and flexible professionals with mature interpersonal relationships.

During childhood, emotional intelligence is that with the core power of social and emotional development to maintain interpersonal functioning and regulation of self and the feeling for another. Educational art practices are an adequate environment for the formation of EI (hereafter – EI) that comprises affective, cognitive and social aspects in students' personal experience.

EI, which is commonly defined as the ability to perceive, understand, regulate, and utilize emotions in oneself and others, plays a key role in promoting an inclusive learning environment. Teachers with higher levels of EI are better equipped to respond constructively to students' emotional and behavioral needs, promote psychological safety, and foster a sense of belonging in diverse classrooms. These abilities are particularly important for inclusive education, which aims to provide equal learning opportunities for all students, regardless of their abilities, background, or disability. In this regard, we consider it necessary to explore the role of art as a tool for developing emotional intelligence in inclusive education, which is a highly relevant topic in scientific discourse.

The research examines how art serves as an emotional intelligence development tool in different educational environments through its assessment of various art programs which affect emotional intelligence development.

Research objectives of the article:

1. Analyze the dynamics of statistical data on the development of inclusive education in Ukraine and assess structural changes in the distribution of students with SEN between special and inclusive forms of education;
2. Assess key indicators characterizing the education of students with special educational needs (further - SEN) in terms of the prevalence of inclusive classes in general education schools
3. Conduct a regression analysis to identify factors that influence the prevalence of inclusive classes in general education schools.;
4. Identify correlations between staffing indicators and education coverage and the prevalence of inclusive education in general education schools;
5. Cluster regions of Ukraine according to the level of coverage of students with inclusive education;
6. Conduct a regression analysis to determine the impact of the structure of forms of education for students with SEN at the regional level on the integral indicator of the potential development of social and emotional competencies;
7. Conduct an empirical analysis to determine the relationship between the level of involvement of students in inclusive classes in artistic activities and the development of their emotional intelligence.

LITERATURE REVIEW

In the literature of science, EI has been depicted as a collection of qualities which encompasses managing, recognizing, regulating and perceiving one's own and other's emotions (Krishnan & Awang, 2024; Coronado-Maldonado & Benítez-Márquez, 2023; Rachmad, 2022; George et al., 2022; Khilmiyah & Wiyono, 2021; Elfenbein & MacCann, 2017). According to the ability-based model of Mayer and Salovey (1997), EI is comprised of four major constructs: regulating emotions, understanding emotional states, perceiving emotions and utilizing emotions to assist cognitive processes (Elfenbein & MacCann, 2017).

Conceptualization of EI implies a multidimensional construct: regarding self-awareness, impulse control, empathy, understanding and familiarity with emotions (Coronado-Maldonado & BenítezMárquez, 2023; Rachmad 2022; George et al., 2022) that are necessary for efficient relationships in social and professional context. Khattak et al. Emotional intelligence is a type of ability like other competencies, and can hence be developed over time,

especially due to the fact that emotions can act as moderators for problem solving, creativity and socializing, therefore making EI highly significant in cultivating creative potential (Mahire & Ahire, 2024).

In art education, EI is understood to be a critical tool in the development of teachers as learners and practitioners, especially within inclusive classroom settings. Studies demonstrate that involvement in arts activities can facilitate the emergence of empathy, self-regulation, and positive interaction with students (Krishnan & Awang 2024; Coronado-Maldonado & Benítez-Márquez, 2023; Rachmad, 2022; George et al., 2022; Khilmiyah & Wiyono, 2021). Art, as we know, can moderate emotional self-expression and creative functioning is characterized by the active utilization of emotions as source of information, thus contributing to enhanced efficacy learning and EI development in students. On the other, at the present stage of development of pedagogical science, the focus is on promoting this type of activity among teachers who show a growing interest in introducing art to EI development with regard to differentiated learning opportunities for all students and promotion of inclusiveness as well as creation of safe emotional environment (Iryhina et al., 2020).

It is important to mention, in education services, the cultivation of EI will assist educators to successfully manage intricate emotions situations and make emotionally based pedagogical decisions, as well as establish trustful relationships with learners that all facilitate effective teaching and classroom administration (Jasubhai, 2025). Research by Zhi et al. (2024) has found that the high EI of an educator is directly related to one's development of empathy, patience and resilience which are necessary when creating a positive classroom environment, as well as indicating that for academic success and the EI students develop it is important for them to be educated by high-emotional-intelligent educators. In this line, it seems that teachers with high EL manage stress easier, react in a more constructive way to troubling student behaviors and promote their active participation in learning (Zhi et al., 2024).

Given that art offers a special means to develop EI through promoting self-expression and self-reflection as well as the empathy, hence, we can emphasize on this point. Music serves to trigger a variety of emotions and stimulate feelings, helping students acknowledge and analyze their own state; visual arts represent an opportunity for journeying through the world of inner self by transforming ideas and feelings into something creative; drama offers a safe place for trying on different roles, perspectives, states of mind in order to build empathy with others and establish relationships (Gulla et al., 2022; Fleming, 2025).

Self-awareness as one of the important components of EI is achieved through creative process that result in meditation and reconsideration. With the creative writing, students get to investigate their personal identities, develop a unique voice and make connections between their life experience and social conditions. Collaborative art allows teamwork, communication skills and appreciation for the opinions of others which in turn facilitates social development and empathy.

Studies also demonstrate that participation in the arts enhances mental health by lowering levels of stress, anxiety, and depression (Stuckey & Nobel, 2010). The process of creation is mind-body working together to access the present moment—as we do with mindfulness exercises transforming emotion driven tension into "good creative energy." Furthermore, a common bound through arts expression also forms the building block of community, identity and support, all important for teaching social emotional learning to students.

There is increasing evidence that including EI within inclusive pedagogical practices is an effective way to respond to the diversity of students in our classrooms. EI allows educators to be more attuned and flexible when dealing with the unique needs of individual students, which in turn fosters an emotionally nurturing and safe environment. It is worthwhile to mention that teachers who posses high EI are more capable at controlling social interaction, minimizing communication tension and driving differentiated learning processes, which is greatly significant in the inclusive classroom (Mrisho & Mseti, 2024).

Research provides evidence for the fact that EI influences pedagogical effectiveness for inclusive education. Particularly, it has been demonstrated that to train teachers professionally in EI leads to a more inclusive attitude and better pedagogic procedures, e.g., working with behavioral problems and adjusting the teaching to emotional/social needs as well as academic achievement. High EI teachers are more likely to employ constructivist student-centred teaching methodologies that align with inclusive education (Calandri et al., 2025; Mgaiwa & Milinga, 2024).

Inclusive education refers to teaching that is accessible to all students, regardless of their abilities, disabilities or the range of their individual needs. At heart the ethos of inclusion is based on equality, participation and removal of limitation to learning. Meanwhile, the practice of inclusive education comes with many challenges which include lack of training for teachers, dearth of material and educational resources and psychological resistance out of overload or uncertainty. Teachers frequently describe challenges in addressing the variegated needs of

students without sufficient emotional support and lack of methodology (Jardinez & Natividad, 2024; Assad, 2025).

In more inclusive education, children with SEN learn in general schools that provide systemic adjustments of content and teaching methods, as well as the created educational environment to meet individual educational and social emotional needs (Cabinet of Ministers of Ukraine, 2021). In an inclusive classroom, structural, pedagogical and social barriers to full participation in the learning process are addressed, and a range of flexible, differentiated teaching strategies are used. Through different artistic practices, inclusive education is not only targeting academic effects, but EI conducive to the socialisation process, mutual understanding and affection as well as positive emotion climate at school premises. This is a strategy consistent with social justice and educational equity in which diversity is presented as a pedagogical tool to multilevel learning effectiveness and the development of more complete (social-emotive) individuals from the role players on this photo (Baral, 2024).

This way, art is presented as a core-resource that propitiates the EI promotion since it unites self-reflection, empathy, social skills and psychoemotional well-being with intellectual tools, specifically applicable to an inclusive learning environment and for support of inclusive pedagogical practices. In this sense we believe that it is important to study the role of art in emotional intelligence within inclusive education, in order to fill a scientific gap on this subject and to foster interdisciplinarity on studies related with this issue.

MATERIALS AND METHODS

The research methodology includes the following methods and approaches:

- Methods of classification and systematization of data became the basis for determining information on the number of students with SEN, distribution by forms of education, and the structure of general education schools;
- Comparative analysis made it possible to study the dynamics of the development of inclusive education and assess the effectiveness of the integration of students with SEN;
- Regression analysis was used to determine the impact of the total number of students with SEN, the number of students in special general education institutions, and students with developmental disabilities in regular classes on the proportion of general education institutions with inclusive classes;

- Correlation analysis made it possible to assess the interrelationships between key indicators of inclusive education (the ratio of students to teachers, the proportion of female teachers, the proportion of children and young people not in school) and indicators of the prevalence of inclusive education in general education institutions;
- Cluster analysis was used to classify regions of Ukraine according to the level of coverage of students in inclusive classes;
- Regression analysis was used to determine the impact of the structure of forms of education for students with SEN (regional level) on the potential development of emotional intelligence.

Empirical research using descriptive statistics made it possible to establish a relationship between the level of involvement of students in inclusive classes in artistic activities and the development of their social and emotional competencies. The study sample consisted of 20 students from inclusive classes, where the level of participation in artistic practices (music, drawing, theatrical activities) was determined and assessed on a five-point scale. The integral indicator of the involvement of students in inclusive classes in artistic activities was determined as the arithmetic mean of the corresponding scores in artistic practices (music, drawing, theatrical activities), and the level of emotional intelligence was assessed on a standardized scale (0–100).

RESULTS

According to the information presented in Table 1, overall the total number of students with SEN at GSEI was still increasing from 2014 to 2024, reflecting a tendency toward inclusive education. Of interest is that although the percentage of SEN students in special SEI has been declining over time, their percentages in inclusive class have been increasing which suggests a continued process of support for promoting integrated environments to children with disabilities.

The ratio of general education schools with inclusive classes increased from 9.07% in 2016/17 to 57.95% in 2023/24, indicating a significant extension of the inclusive school fabric; simultaneously, the percentage of learners with SEN included in these classes grew from 6.28% to 45.04%, pointing at a process of concentration into it for SEN students. Simultaneously, the decrease in students of standing alone or by special groups indicates that

inclusive education is more effective and less need exists for different kinds of professional education.

Table 1.

Dynamics of the number and distribution of students with SEN in general secondary education institutions, 2014–2024

School year	Total number of students with SEN, persons	Students with SEN in special secondary schools, persons	Students with SEN in inclusive classes in general secondary education institutions, persons	Percentage of students with SEN in special secondary schools, %	Percentage of students with SEN in inclusive classes in general education schools, %	Total general education institutions, units	Educational institutions with inclusive classes, units	Percentage of general education schools with inclusive classes, %	Students with SEN in special general secondary education institutions, persons	Students with SEN in special classes in general secondary education institutions, persons	Students with SEN in inclusive classes in general secondary education institutions, persons	Students with developmental disabilities in regular classes of general education institutions, persons	Students with SEN who study individually in general secondary education institutions, persons
2014/2015	60.072	38.396	21.676	63.92	3	–	–	–	38.396	4.955	2.165	11.328	3.228
2015/2016	61.528	38.962	22.720	63.32	4.42	–	–	–	38.962	5.265	2.720	11.543	3.038
2016/2017	66.581	39.596	26.985	59.47	6.28	16.728	1.518	9.07	39.596	5.669	4.180	11.283	5.853

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2017/ 2018	68.055	3 7 9 . 1 4 7 2 9 7	57.93	10.55	16.060	2.620	16.31	39.427	5.918	7.179	11.502	4.029
2018/ 2019	72.237	3 1 7 1 . . 7 8 8 6 7 6	52.31	16.43	15.421	3.790	24.58	37.787	6.230	11.866	12.160	4.194
2019/ 2020	77.263	3 1 7 8 . . 1 6 1 4 1 3	48.03	24.13	15.106	5.331	35.29	37.111	5.976	18.643	11.950	3.583
2020/ 2021	82.317	3 2 6 5 . . 4 0 6 7 1 8	44.29	30.47	14.815	6.394	43.16	36.461	5.844	25.078	11.950	2.984
2021/ 2022	88.813	3 3 6 2 . . 2 6 9 8 4 6	40.87	36.8	13.991	7.136	51	36.294	5.661	32.686	12.062	2.110
2022/ 2023	84.037	3 3 4 3 . . 0 8 2 6 9 1	40.49	40.29	12.976	7.012	54.04	34.029	4.770	33.861	9.595	1.782

2023/ 2024	89.129	34.014	40.147	38.16	45.04	12.701	7.360	57.95	34.010	4.363	40.147	9.107	1.502

Note. Compiled by the author based on Institute of Educational Analytics (n.d.)

Therefore, it should be noted that these aspects indicate structural changes in the inclusive education system aimed at expanding the integration of children with SEN into the general education process and optimizing the use of resources in general education institutions.

To assess the impact of the total number of students with SEN, the number of students with SEN in special institutions, and students with developmental disabilities in regular classes on the share of general education institutions with inclusive classes (%), which is defined as a dependent variable, regression modeling was performed. The resulting regression model looks like this:

$$Y = 95{,}814 + 0{,}001 \cdot X_1 - 0{,}004 \cdot X_2 + 0{,}001 \cdot X_3.$$

The high accuracy and reliability of the produced forecast are confirmed by the results of regression model construction (Table 2). The multiple R is 0.997, indicating a high degree of association between the variables in the model under study. The R Square is 0.994, also shows that the generated model describes overall 99.4% variability of dependent indicator due to independent indicators, expressing the strong explanatory power of this model. The adjusted R square is 0.989. A Standard Error of 1.94 means no considerable difference between the true and estimated scores.

The model ANOVA results indicate that the model terms are statistically significant. The value of the F-statistic is 205.05 (at Significance F = 0.000078), and it is less than the critical value of 0.05, which means that our specified model can be said to have statistical significance as a whole. The positive impact was also exerted by the overall number of students with SEN (coefficient 0.00113; P-value = 0.007), which indicates that this factor has a positive effect on inclusive classes development: if the figure grows by 1,000 persons, so does the number of schools with inclusive classes by about ≈1.13%. The negative effect of the number of students with SEN in special (coefficient −0.00431; P-value = 0.021) was also significant, because it showed that the factor had a different direction in relation to balance inclusive classes. The coefficient of students with developmental disabilities in regular classes (0.00092; P = 0.415) is not statistically significant, which suggests that this factor has no effect.

Table 2.
Regression modeling results

Regression Statistics								
Multiple R	0.997							
R Square	0.994							
Adjusted R Square	0.989							
Standard Error	1.938							
Observations	8							
ANOVA								
	df	**SS**	**MS**		**F**		**Significance F**	
Regression	3	2310.879	770.293		205.045		0.0001	
Residual	4	15.027	3.757					
Total	7	2325.906						
	Coefficients	**Standard Error**	**t Stat**	**P-value**	**Lower 95%**	**Upper 95%**	**Lower 95.0%**	**Upper 95.0%**
Intercept	95.814	52.022	1.842	0.139	–48.624	240.251	–48.624	240.251
X_1 (Total students with SEN)	0.001	0.0002	5.025	0	0.001	0.002	0.001	0.002
X_2 (Students with SEN in special education institutions)	-0.004	0	–3.714	0	–	–0.001	–0.008	–0.001
X_3 (Students with developmental disabilities in regular classrooms)	0	0	0.909	0	–0.002	0.004	–0.002	0.004

Note. Author's own calculations.

The regression modeling results show that the developed model explains and predicts educational development in inclusive education with strong accuracy which enables researchers to identify essential factors that influence this process. The data obtained confirm the statistically significant positive impact of the total number of students with SEN and the statistically significant negative impact of the concentration of such students in special institutions on the share of general education institutions with inclusive classes. At the same time, the impact of the number of students with developmental disabilities studying in regular classes within the scope of this model specification was not statistically significant, which limits the possibility of drawing unambiguous conclusions about the role of this factor.

The number of fully inclusive general education institutions expanded from 9.26% in 2016 to 57.80% in 2023 which demonstrates that inclusive classes spread throughout the research period. The student-to-teacher ratio stayed between 14.7 and 17.9 students per teacher

throughout the period because teaching workload slightly increased during 2019–2020 because of new inclusive education programs which lacked sufficient teacher support.

The female teaching staff percentage stayed at a high level throughout the entire period because it reached between 96.6% and 98.8% of the total teaching staff. The school enrollment rate for children and young people showed improvement from 15.97% in 2015 to 2.5% in 2022 through successful programs which taught students in educational facilities while minimizing their time spent outside of school.

Table 3.

Dynamics of key indicators of the educational process and the development of inclusive education, 2015–2024

Year of study / Year	Ratio of students to teaching and educational staff	Percentage of female teaching staff, %	Percentage of children and young people not in school (primary and secondary education)	Proportion of comprehensive general education schools with inclusive education (%)
2015	–	–	15.97	–
2016	14.83	96.68	2.90	9.26
2017	14.98	96.70	2.80	16.66
2018	14.87	96.63	2.80	25.11
2019	17.87	98.47	2.70	36.07
2020	17.22	98.50	2.60	44.11
2021	16.48	98.40	2.60	52.16
2022	–	–	2.50	53.83
2023	15.97	98.77	–	57.80
2024	14.71	98.62	–	–

Note. Compiled by the author based on United Nations (2024), UNESCO Institute for Statistics (2025).

The information provided by Table 3 illustrates the positive trends in development of inclusive education in Ukraine, which is confirmed by growth of number of schools with inclusive classes, increase in enrolment and relatively stable level of workload teachers involved into IE and followed sex structure.

In the study, for the purpose of testing relationships between key indicators of inclusive education (student-teacher ratio – X1, share of women teachers--factors X2, percentage of children and young people not in school – X3) and basic features (share belonging to common schools with inclusive classes –Y1; part-time students with special educational needs in these lessons--Y2), a correlation analysis was performed. The outcomes are represented in a correlation matrix to indicate the strength and direction of the relations between the indicators (Table 4).

The results reveal a weak positive association ($r = 0.13$) between student-teacher ratio and female teachers, which suggests an almost negligible relationship between these two variables. In contrast, the student-teacher ratio has a high positive correlation with the

percentage of children and young people out of school (r = 0.85), which suggests a direct association between learning group intensity and their participation in study activities by children. Meanwhile, there is a middle negative correlation between X1 and the general secondary school rate of students in inclusive classes (Y1; r = -0.60), suggesting that the proportion of schools with inclusive classes will decrease as the number of students per teacher rises. Simultaneously, there is a strong positive correlation between X1 and the percentage of students with SEN in inclusive classes (Y2; r = 0.98), which can signal a greater concentration of students with SEN at large to medium teaching groups.

The proportion of female teachers correlates moderately positively with the fraction of children not attending school (r = 0.61) or with SEN percentage among students in inclusive classes (r = 0.61). and the ratio of inclusive: general schools (r = -0.78), showing structural components in relation to staffing features of inclusive education.

The most important associations were noted in the case of Share of children and young people out of school, particularly X3 shows a very strong negative correlation with Share of general education schools with inclusive classes (Y1; r = –0.90) but at the same time it also exhibits a very strong positive correlation with Share of students with SEN in inclusive classes (Y2; r = 0.91), which means that decrease coverage by education is balanced out by an overload on existing inclusively educated classes.

Moreover, a very strong negative correlation between the share of institutions with inclusive classes and the share of students in these institutions that have SEN was detected (r = −0.97), i.e., re-distribution of the number of students when enlarging network of inclusive institutions is recorded.

Table 4.
Correlation matrix of key indicators of inclusive education

	X_1	X_2	X_3	Y_1	Y_2
X_1	1	0.1285732	0.84518285	–0.5994924	0.98446318
X_2		1	0.61040982	–0.7768918	0.60671417
X_3			1	–0.8998575	0.90959636
Y_1				1	–0.9716425
Y_2					1

Note. Author's own calculations.

The obtained data of the correlation analysis prove that there are systemic structural interrelations between personnel provision for children's education, the level of child school

attendance and de distribution of children with SEN; this can serve as statistical grounds to make management decisions in sphere of strategic development of inclusive education.

The cluster analysis of Ukrainian regions depending on the rate of students studying in inclusive classes have shown similarity that they can be divided into 2 clusters: Cluster 0 – oblasts with low rate (≤46%) including students studying under inclusive programs, and Cluster 1 – oblasts with high rates (>46%). The results in Table 5 indicate that Areas of Cluster 1 have students more concentrated in inclusive classrooms, and less concentrated in special schools and special classes. This type of organization of educational activities at the university provides more favorable conditions for the formation and development of students' emotional intelligence, below EI (emotional intelligence) that occurs, including professional activity contributes to systematic work on your emotionally-intellectual "self", this – learning integrated pedagogical techniques.

Particularly significant was the active involvement of students in inclusive education found in Zakarpattia (63.7%) and Ivano-Frankivsk (63.7%) regions, 81.1% - Luhansk region provided opportunities for formation of emotional self-regulation, empathy, and awareness of own emotions at a level of individual student. Regions with scant inclusion class coverage (Cluster 0), instead, have a greater prevalence of special general education schools and such classes (especially Kharkiv and Zaporizhzhia regions). This institutionalization of the educational process may reduce the possibilities for students to develop their emotional intelligence individually, in as much as it obstructs access to different forms of artistic and pedagogical practices that allow forming affective competences in a comprehensive model of education.

Table 5.

Distribution of students with SEN by form of education in the regions of Ukraine and clustering results

Region	In special general education schools (%)	In special classes (%)	In inclusive classes (%)	Studying individually (%)	With developmental disabilities in regular classes (%)	Class
Vinnytsia	41	0	41.1	8.6	8.9	0
Volyn	33.6	0	53.3	11.5	0.8	1
Dnipropetrovsk	41.3	12	40.8	5.5	0	0
Donetsk	41	2.5	32.5	21.5	2.5	0
Zhytomyr	34.5	3.4	55.9	6.1	0.1	1
Transcarpathian	12.7	2.9	61.2	23.2	0	1
Zaporizhzhia	43.3	18.3	32.6	2	3	0
Ivano-Frankivsk	25.1	0.4	63.7	10.1	0.7	1
Kyiv	20.7	0	55.6	19	4.7	1
Kirovograd	39.2	7.3	38.4	14.7	0	0

Luhansk	0	5.4	81.1	11	2.5	1
Lviv	39.4	1	47.8	11.2	0.6	1
Mykolaiv	44.7	9.2	29.2	12	4.9	0
Odessa	40.6	1.3	49.5	8.4	0.2	1
Poltava	37.1	3.1	50.4	8.6	0	1
Rivne	37.1	0.1	49.4	12.5	0.9	1
Sumy	41.5	1.7	46.4	10.4	0	0
Ternopil	33	0	52.9	12.2	1.9	1
Kharkiv	53.4	1.9	35.8	7.4	1.5	0
Kherson	8.1	32.4	46	2.6	10.9	0
Khmelnytsky	35.9	0.5	48.1	14.6	0.9	1
Cherkasy	39.9	3.9	36.9	19.2	0	0
Chernivtsi	27.2	0	57.5	14.3	1	1
Chernihiv	36.5	1.4	48.8	13.2	0.1	1
Kyiv	55.7	0.4	33.1	2.4	0.4	0

Note. compiled by the author based on Institute of Educational Analytics (n.d., 2024)

Thus, the results of cluster analysis confirm the existence of statistically significant differentiation between regions in terms of the level of coverage of students by inclusive education. Regions with a higher proportion of students in inclusive classes are characterized by a lower share of special forms of education, which indicates structural differences in the organization of the educational process. The identified differences can be considered as institutional prerequisites for the formation of individual socio-emotional competencies of students within an inclusive educational environment.

At the regional level, regression modeling was used to assess the relationship between the structure of forms of education for students with SEN and the integral indicator of potential conditions for the development of their social and emotional competencies. The independent variables were: the proportion of students studying in special secondary schools (X1), in special classes (X2), and students with developmental disabilities in regular classes (X3). The dependent variable was defined as the integral indicator of the potential development of the social and emotional skills of students with SEN, aggregated at the regional level. The resulting regression model is as follows:

$$Y = 81{,}847 - 0{,}868 \cdot X_1 - 0{,}599 \cdot X_2 - 0{,}895 \cdot X_3.$$

The results of the regression model show that the forecasts are super accurate and reliable. The correlation coefficient (Multiple R) is .934 — so we have a very strong connection between the issues, it seems. The R Square is 0.87, indicating that 87% of the spread in potential EI development is attributable to changes in independent factors. The adjusted coefficient of determination (Adjusted R Square) is 0.853 and the standard error of the model

(Standard Error) is 4.50 indicating considerable implausible variations between both actuals and predicted value.

The statistical verification (ANOVA) has confirmed the model significance: F-statistic is equal to 47.53 atF =$1.55 \cdot 10^{-9}$ that indicates a very significant level less than critical value of 0.05. All independent variables were statistically significant: X1 (students in special secondary schools; coefficient –0.868; P < 0.001) – negative effects on the potential EI development: increase in Students' quotient of special schools is accompanied by a decrease in concentration of resources for development of social and emotional competencies in inclusive environment.in X2 (students in special classes; coefficient –0.599; R = 0,0009) – again, a negative impact does mean competition between specialized and inclusive forms of education.X3 (students with developmental disabilities learning among typically developing peers; R = -0,895), positive effect less apparent but statistically reliable once more indicates the need for additional resources to include students into regular classes (see table 6).

Table 6.

Regression modeling results

Regression Statistics								
Multiple R	0.934							
R Square	0.872							
Adjusted R Square	0.853							
Standard Error	4.496							
Observations	25							
ANOVA								
	df	**SS**	**MS**		**F**		**Significance F**	
Regression	3	2882.311	960.770		47.526		1.5×10^{-9}	
Residual	21	424.529	20.216					
Total	24	3306.840						
	Coefficients	**Standard Error**	**t Stat**	**P-value**	**Lower 95%**	**Upper 95%**	**Lower 95.0%**	**Upper 95.0%**
Intercept	81.847	3.036	26.956	9×10^{-18}	75.532	88.161	75.532	88.161
X_1 ()	–0.868	0.075	–11.570	1.42×10^{-10}	–1.024	–0.712	–1.024	-0.712
X_2 ()	–0.599	0.155	–3.855	0.001	–0.921	–0.276	–0.921	–0.276
X_3 ()	–0.895	0.411	–2.176	0.041	–1.750	–0.040	–1.750	–0.040

Note. Author's own calculations.

The obtained results give evidence to the hypothesis about significant effect of organization of inclusive classes in regions on possibility for development of social and emotional competences among children with SEN.

The data analysis was tested on 20 inclusive class's students over participation in three artistic activities (music, drawing and theater practice). The degree of participation was assessed

at five levels (1 = minimum, 5 = maximum) for each field. To aggregate the level of participation across students, a measure of rAP was derived by taking the average r score of all three indicators (see Table 7).

Emotional intelligence level was measured with a standardized scale of 0 to 100 and including the main competencies: self-regulation, empathy, communication skills and cooperation. After the analysis, there was a positive correlation between the average for artistic activities and the level of EI development. Students scoring participation levels of the 1–2.5 had mean EI of 55.6, and those with high involvement (>4.5) reported EI of 91.0 on average. EI increased gradually with the increase in average participation score from 67.0 of group 2.51–3.5 to 80.3 of group 3.51–4.5 as for the intermediate groups were concerned, respectively.

Table 7.
Level of participation of students in inclusive classes in artistic activities and corresponding EI development (n = 20)

Student	Music	Visual arts	Theater	Average score for participation in the arts	EI score (0-100)
1	3	4	2	3	70
2	5	3	4	4	82
3	2	1	2	1.67	55
4	4	5	3	4	78
5	3	3	3	3	65
6	4	2	4	3.33	72
7	5	5	5	5	90
8	2	3	1	2	58
9	3	2	2	2.33	60
10	4	4	3	3.67	75
11	5	3	4	4	85
12	2	1	2	1.67	50
13	4	4	3	3.67	74
14	3	2	2	2.33	62
15	5	5	5	5	92
16	3	3	3	3	67
17	4	4	4	4	80
18	2	2	2	2	55
19	3	3	3	3	65
20	5	4	4	4.33	88

Note. Author's own calculations.

The results obtained indicate the existence of an associative relationship between the level of involvement of students in inclusive classes in artistic practices and the development of their EI.

Correlation and regression analysis methods were used to assess the relationship between the average score of students' participation in artistic practices and their emotional intelligence (EI) level (see Table 8). The Pearson's correlation coefficient calculation showed

that artistic activity participation intensity maintained a strong relationship with Emotional Intelligence (EI) levels at r = 0.98.

Based on the data obtained, a simple linear regression model was constructed:

$$EI = 32,16 + 12,00 \times (Average\ participation\ score).$$

The value of the coefficient of determination (R^2 = 0.97) indicates that 97% of the variation in EI levels can be explained by the average score of students' participation in artistic practices. The model shows statistical significance because the F-statistic reaches 501.15 while the probability value remains below 0.0001. The slope coefficient β_1 = 12.00 ($p < 0.00001$) shows that an increase in the average participation score by one point is associated with an increase in the EI level by an average of 12 points.

Table 8.
Results of regression analysis and correlation between participation in artistic practices and the level of emotional intelligence of students in inclusive classes

Indicator	Value
Pearson r	0.98
R	0.97
Adjusted R^2	0.96
F-statistic	501.15
Significance F (p-value)	<0.0001
Intercept (β_0)	32.16
Slope (β_1)	12.00
Standard Error (Slope)	0.54
P-value (Slope)	<0.00001

Note. Author's own calculations.

The results support the assumption that student participation in the arts has a positive associational impact on social and emotional capacities. Specifically, those with a higher average participation score also show more EI Among students we found a positive and significant correlation between art activities (model II) and self-regulation, this suggests the important of art plays an important role for empathy, self-regulation communication in inclusive education.

For each student within inclusive classes, an average score of participation in artistic activities was computed and students were organized with the intervals of their mean score on artistic activity according to which a mean EI level per range was calculated (Table 9).

Table 9.
Dependence of the average score for participation in art and the average EI

Range of average participation score	Number of students	Average EI
1–2	5	5
2.51–3.5	7	67
3.51–4.5	6	80.3
>4.5	2	91.0

Note. Author's own calculations.

Results from the collected data present higher GI score with increased levels of participation in artistic activities among students. Students with the lowest (1–2.5) overall participation level have a mean EI of 55.6, students with the highest (>4.5) have a mean EI of 91.0. Intermediate students, those with the average score of 2.51–3.5 increase their average elaboration index (EI) to 67.0 and the students with the average score of 3.51–4.5 have EI as high as 80.3. These results support the hypothesis that more sustained participation in the arts (music, drawing, theater classes) predicts higher level of development of social and emotional competences, and specifically self-regulation, empathy, and cooperation skills.

DISCUSSION

According to the research, a conclusion on the induction of emotional intelligence in students when they are involved in differentiated works of art can be made, thus summarizing this and highlighting some main points.

The first trend is derived from the study on inclusive education and shows a tendency for marginal increase in the ratio of students who belong to inclusive classroom and for decrease in that of special general education school, suggesting efficacy in developing an inclusive system.

Secondly, results of regression and correlation analysis showed the fact that increasing in quantity students with SEN will influence positively at process inclusive classes; but also found that organizational factors (correlation between workload on teachers, staff composition and number of students) have a statistically significant impact on effectiveness-inclusive education and formation inclusive environment.

Thirdly, there are differences in coverage of the students by inclusive classes, which is revealed through cluster analysis for regions with a high share of students from inclusive classes and a low degree for special forms of education less dependent than in the second chance—but more share student direct concentration is possible in different special schools and special classes region hinders their individual development, enhances socialization. In addition, the areas with the strongest pervasiveness are those where there is a high percentage of students in mixed classes: this fact confirms that EI finds its natural habitat in places where proportionally it has easier "space."

Fourth, a positive effect of art on the social and emotional development of students was established- this supports the need of integrating academic and creative learning in special classrooms.

The outcomes of the research are in line with Rachmad (2022), Coronado-Maldonado & Benítez-Márquez (2023), George et al. (2022) who highlight the multidimensional nature of EI such as self-awareness, self-management, empathy, self-motivation and social skills. Recently, it has determined that studying in the field of arts helps to generate EI.

According to the results of the regression analysis, total number of students with SEN have statistically significant positive influence on inclusive classes' share and the amount of the students in special institutions has a negative one (which confirms previous conclusions by Mgaiwa and Milinga (2024) that is given optimal distribution of SEN students between special and inclusive forms of education for organizing effective educational process.

Based on the correlation analysis, it is not difficult to observe that there is a positive association between the overall number of students with SEN and their percentage in inclusive classes, and a strong negative association between the share of schools offering inclusive classes and the percent of students with SEN in these classes; this correlates with Zhi et al's claims. (2024) that differential learning can be reduced in larger classes.

The cluster analysis of the regions has shown that senior classes in areas with a larger number of 1, being groups (region Cluster 1) create more favorable conditions for the individual realization of EI students as they systematically participate in art processes, which confirms the understanding given by Rachmad (2022), George et al. (2022), Khattak et al. (2025), Coronado-Maldonado and Benítez-Márquez (2023) about EI and social skills, empathy, self-control.

Thus, based on the conducted research, it has been found that art acts as a tool that plays a leading role in the development of emotional intelligence in students with SEN and also has a positive impact on the effective development of inclusive education.

CONCLUSIONS

According to the findings of the research we can say that art contributes a lot to the development of emotional intelligence in inclusive education. The results of the regression correlation analysis show that the structure of teaching methods has a statistically significant influence on inclusive educational environment and possible formation “EI” students with SNI The positive influence of music, visual art, theatre on formation of self-control ability to empathy and interpersonal cooperation skillful communication in children with special needs was determined.

In this sense, we can observe the usefulness the development of social emotional competence in pupil with SEN (included from art to develop EI), which will imply improval on his part. Consequently, we can observe that higher participation in art by students with SEN is linked to greater EI and this highlights the relevance of including artistic activities as part of the inclusive classroom curricula.

The practical value of the research is that its results can be used as a basis for more effectively implementing an inclusive education system, as well as resource planning, formation of pedagogical strategies and development of EI in students with SEN attending general schools. Additional investigation should consider collecting more pedagogical and socio-demographic data in order to provide a more precise examination of the role of art on EI development, as well as the effectiveness of integrating SEN students in inclusive classrooms.

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