

**ARTISTIC GIFTEDNESS AMONG FIRST-YEAR UNIVERSITY STUDENTS: A
MULTIDIMENSIONAL SCREENING STUDY AT HANOI NATIONAL UNIVERSITY OF EDUCATION**

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Abstract. Artistic giftedness is increasingly conceptualized as a multidimensional construct integrating cognitive ability, creativity, and domain-specific artistic expression. This study examined the levels, structural relationships, and predictors of artistic giftedness among 285 first-year students at Hanoi National University of Education. Data were analyzed using descriptive statistics, correlation analysis, and multiple regression analysis. The results indicated that a substantial subgroup of first-year students demonstrates potential for artistic giftedness. Cognitive ability, creativity, and artistic giftedness were strongly and significantly interrelated, supporting the structural coherence of the Artistic Giftedness Screening Scale. Regression analyses revealed that both cognitive ability and creativity significantly predicted artistic giftedness, with creativity emerging as the strongest predictor. No statistically significant gender differences were observed. These findings suggest that artistic giftedness among first-year university students is more appropriately conceptualized as developmental potential rather than fully manifested talent.

Keywords: Giftedness; Artistic Giftedness; First-year students; Hanoi National University of Education

1. Introduction

In the contemporary landscape of higher education, the identification and development of students' giftedness have become an essential objective for enhancing human resource quality and fostering holistic development. Beyond traditional academic abilities, artistic giftedness is increasingly recognized as a distinct domain of competence reflecting individuals' capacities for aesthetic sensitivity, creativity, and expressive performance across artistic forms such as music, visual arts, dance, drama, and applied arts. International research has shown that artistic giftedness contributes not only to personal growth but also to creative thinking, socio-emotional development, and adaptive functioning in modern societies (Gardner, 2011; Winner, 1996).

Giftedness is commonly conceptualized as an individual's natural abilities that exceed average levels, representing elevated developmental potential in one or more domains. These abilities are grounded in cognitive and biological foundations and remain latent unless activated through education, practice, personal motivation, and supportive environmental conditions (Gardner, 2011; Gagné, 2015; Renzulli, 1986). Within Gardner's theory of multiple intelligences, artistic-related intelligences such as musical, visual-spatial, and bodily-kinesthetic intelligences are understood as domain-specific forms of giftedness, each characterized by distinct cognitive bases and developmental trajectories. This perspective highlights that artistic giftedness is not equivalent to general intelligence or IQ but constitutes a specialized potential closely linked to perceptual processes, imagery-based thinking, and aesthetic sensitivity (Gardner, 2011). Complementarily, Gagné's differentiated model conceptualizes giftedness as outstanding natural abilities that are transformed into talents through learning and developmental catalysts. Although

creativity is not classified as a natural ability in this model, it is considered a critical personal factor facilitating the development and expression of giftedness, particularly in artistic domains (Gagné, 2015; Subotnik, et al., 2011).

Contemporary psychological and educational research increasingly conceptualizes giftedness as a multidimensional construct rather than a unidimensional attribute. Influential models emphasize that giftedness emerges from the interaction among cognitive abilities, creativity, motivation, and domain-specific contexts (Subotnik, et al., 2011). In Renzulli's three-ring model, giftedness results from the convergence of above-average ability, creativity, and task commitment, with cognitive ability providing the foundation for domain-specific learning and skill acquisition. In the arts, such cognitive foundations support aesthetic perception, visual-auditory processing, imagery-based thinking, and the acquisition of artistic techniques (Renzulli, 1986). Creativity, in turn, is regarded as a core structural component of artistic giftedness. Domain-specific theories of creativity, including Amabile's componential model, conceptualize creative potential as arising from the integration of domain-relevant knowledge, creative-thinking processes, and intrinsic motivation. In artistic contexts, creativity enables individuals to imagine, experiment, and generate novel forms of expression, functioning both as a component of giftedness and as a mediating mechanism linking cognitive ability to artistic expression (Amabile, 2012).

These theoretical perspectives have been reflected in various multidimensional assessment frameworks of giftedness, including the Gifted Rating Scales (GRS), which evaluate several domains of gifted behavior and potential such as intellectual ability, creativity, and artistic talent (Pfeiffer & Jarosewich, 2007). However, the GRS was not designed to operationalize the specific three-component structure adopted in the present study. Rather, it provides broader support for viewing giftedness as a multidimensional construct comprising several interrelated domains. In the present study, artistic giftedness was conceptualized through three dimensions: cognitive ability, creativity, and artistic giftedness.

Artistic giftedness is particularly relevant for students in teacher education programs, especially during the first year of university when students undergo a critical transition and begin to form their professional identities as future educators. Artistic abilities support learning in pedagogical coursework, particularly in early childhood and primary education, and contribute to teachers' capacities to design educational activities, engage learners, and promote holistic development (Arensbergen & Thunnissen, 2015). In Vietnam, despite growing attention to gifted education in areas such as mathematics and science, empirical research on artistic giftedness at the university level, particularly within teacher education contexts, remains limited. Existing studies have largely focused on secondary school students or descriptive accounts of extracurricular activities, with insufficient systematic assessment of cognitive ability, creativity, artistic expression skills, and levels of artistic giftedness among university students (Nguyen., 2012; Tran, 2018).

Against this theoretical and empirical background, the present study on the artistic giftedness of first-year students at Hanoi National University of Education is both timely and necessary. By adopting a multidimensional framework encompassing cognitive ability, creativity, and artistic giftedness, the study avoids reducing giftedness to IQ or isolated performance outcomes and instead captures its developmental and multidimensional nature. The findings aim to provide an objective overview of the level and characteristics of artistic giftedness among first-year students, thereby informing strategies for early identification, nurturing, and development of artistic giftedness in teacher education and contributing to the advancement of higher education toward holistic human development.

2. Theoretical background

Giftedness is commonly conceptualized as a set of natural abilities that significantly exceed age-based norms, reflecting high developmental potential in specific domains rather than fully manifested achievements (Gagné, 2015; Subotnik, et al., 2011). Contemporary theoretical frameworks emphasize that giftedness is a multidimensional construct formed through the interaction of cognitive abilities, creativity, educational experiences, motivation, and domain-specific learning opportunities (Renzulli, 1986; Pfeiffer, 2017). In addition, other potential influencing factors should be acknowledged, including psychological and physical characteristics, field of study, regional background, and prior artistic experience. In the Vietnamese context, the application of international theoretical frameworks (e.g., Gardner, Gagné, Renzulli, Amabile) requires a culturally adaptive approach, as the expression of giftedness is shaped by social norms and specific educational conditions. Therefore, this study adjusts the interpretation of these concepts to ensure contextual relevance while maintaining their original theoretical foundations.

From this perspective, artistic giftedness is conceptualized as a domain-specific form of giftedness, characterized by aesthetic sensitivity, visual thinking, creative thinking, and the ability to express ideas through artistic forms (Gardner, 2011; Winner, 1996). In this study, “cognitive ability” is understood as processes directly related to artistic activity (e.g., aesthetic perception, imagery), rather than general intelligence; similarly, “creativity” is approached as domain-specific creative capacity in the arts, emphasizing originality and appropriateness in artistic expression. This approach helps clarify the domain-specific nature of the constructs under investigation. Moreover, artistic giftedness reflects specialized cognitive and creative mechanisms that develop through experience and education (McPherson & Williamon, 2016). Widely used instruments operationalize artistic giftedness through cognitive, creative, and artistic indicators (Pfeiffer, et al., 2019; Pfeiffer & Jarosewich, 2007). In this study, the assessment focuses on behavioral indicators as a means of identifying latent potential. However, making accurate judgments about an individual’s artistic giftedness requires further consideration of additional influencing factors, such as psychological and physical characteristics, field of study, regional background, and prior artistic experience.

3. Methodology

3.1. Research design, timeline and participants

The study employed a cross-sectional descriptive design with a predictive analytic orientation to examine the level and structure of artistic giftedness among first-year university students at the beginning of the academic year, while also testing the roles of cognitive ability and creativity. A quantitative approach was adopted, with data collected through self-report questionnaires, enabling the measurement of variables as continuous scores and the application of inferential statistical analyses. Regression analysis was conducted to examine the predictive effects of the independent variables, thereby providing empirical evidence to clarify the structure and underlying mechanisms of artistic giftedness in students. A developmental approach conceptualizes giftedness as a dynamic process evolving over time, whereas a cross-sectional design captures constructs at a single point in time. Accordingly, the present study employs a cross-sectional design to provide initial empirical evidence, without making inferences about developmental change.

Data collection and analysis were conducted between September 2025 and January 2026, following the standard phases of the research process, including study design, data collection, data analysis, and report writing.

Participants were 285 first-year undergraduates enrolled at Hanoi National University of Education (HNUE), from teacher education programs (M-age = 18.72), including 58 males (20.4%) and 227 females (79.6%). Participants were recruited through convenience sampling during regular class sessions. Participation was voluntary, and informed consent was obtained from all participants prior to data collection. The study was conducted in accordance with the ethical principles for research involving human participants of HNUE.

3.2. Instrument and psychometric properties

The study employed the Artistic Giftedness Screening Scale, a self-report instrument developed based on contemporary theoretical frameworks of giftedness (Pfeiffer, 2017; Pfeiffer, et al., 2019; Tran, T. M. D., 2018). This scale was designed to screen potential cognitive, creative and artistic indicators and was adapted to the Vietnamese cultural context. Its reliability and validity were subsequently examined using data from the study sample.

The scale consists of 11 items rated on a five-point Likert scale (1 = Not true, 2 = Slightly true, 3 = Moderately true, 4 = Mostly true, 5 = Completely true) and is organized into three subscales: Cognitive Ability (5 items), Creativity (3 items), and Artistic Giftedness (3 items). The Cognitive Ability subscale captures foundational cognitive resources relevant to learning and artistic expression, including rapid acquisition of complex information and task accuracy. The Creativity subscale assesses independent thinking, exploratory orientation, and the generation of novel ideas or products. The Artistic Giftedness subscale reflects domain-specific indicators such as early manifestations of artistic ability, intrinsic motivation for artistic engagement, and the capacity to accurately reproduce artistic forms. In line with profile-based approaches to giftedness identification, interpretation is based on subscale profiles rather than a single global score.

The psychometric validity of the scale was evaluated using multiple complementary indices. The evaluation of the reliability and validity of the measurement instrument was conducted prior to the analyses reported in this paper, following standard psychometric validation procedures in psychological research. However, due to space limitations, the detailed analyses are not fully presented here and are instead summarized briefly in the current study. Internal consistency reliability was strong across subscales, with Cronbach's alpha and McDonald's omega coefficients ranging from 0.875 to 0.891 for the subscales and reaching 0.882 (α) and 0.898 (ω) for the total scale.

Temporal stability was assessed using a test–retest procedure. Of the 285 participants, 262 completed the scale on two occasions separated by a two-week interval. Intraclass correlation coefficients (ICC) ranged from 0.729 to 0.787 ($p < .001$), indicating acceptable to good stability over time.

Construct validity was examined through confirmatory factor analysis (CFA). The three-factor model of cognitive ability, creativity, and artistic giftedness demonstrated a moderate level of fit to the data ($\chi^2 = 149.469$, $df = 41$, $\chi^2/df = 3.646$, CFI = 0.954, TLI = 0.938, RMSEA = 0.097, 90% CI = 0.080-0.113). While the CFI and TLI values supported the proposed factor structure, the RMSEA indicated only marginal model fit. Nevertheless, all indicators loaded significantly on their respective latent factors ($p < .001$), supporting the structural coherence and convergent validity of the scale.

3.3. Data analysis

Data were analyzed using standard statistical procedures appropriate for psychometric and explanatory research (SPSS 31.0). Descriptive statistics were computed to characterize levels and variability of artistic giftedness. Pearson correlation analyses were conducted to examine associations among cognitive ability, creativity, and artistic giftedness. One-way analysis of

variance (ANOVA) was used to test gender differences across subscales. To identify predictors of artistic giftedness, multiple linear regression analyses were performed, with cognitive ability and creativity specified as independent variables. Statistical assumptions were examined prior to interpretation, and significance was evaluated at $p < 0.05$.

4. Findings and Discussion

4.1. Current status of artistic giftedness

The results indicate that all three subscales exhibited mean scores at a moderate level relative to their theoretical ranges. Specifically, cognitive ability showed the highest mean ($M = 13.41$; $SD = 4.209$), followed by creativity ($M = 8.04$; $SD = 2.601$) and artistic giftedness ($M = 7.76$; $SD = 2.831$). This pattern suggests that first-year students generally possess a relatively adequate cognitive foundation, whereas specific manifestations of creativity and artistic giftedness remain at an early stage of development. The standard deviations for all three variables are relatively large, particularly for cognitive ability, indicating substantial individual variability within the sample. This implies that, despite moderate average levels, there exists a subgroup of students with notably high potential alongside those with lower levels of ability.

Correlation analyses revealed strong and statistically significant associations among cognitive ability, creativity, and artistic giftedness ($r = 0.722 - 0.803$, $p < 0.01$), indicating a high degree of interrelatedness among the underlying components. These findings support a multidimensional conceptualization in which artistic giftedness arises from the integrated interaction of multiple domains rather than from a single isolated factor. Notably, the strongest association was observed between creativity and artistic giftedness, underscoring the central role of creativity as a key mechanism through which cognitive resources are translated into domain-specific artistic expression.

Table 1. Descriptive statistics and intercorrelations of artistic giftedness subscales

No.	Subscales	Min	Max	Mean	SD	Intercorrelations		
						1	2	3
1.	Cognitive ability	5	25	13.41	4.209	1	0.793**	0.722**
2.	Creativity	3	15	8.04	2.601		1	0.803**
3.	Artistic giftedness	3	15	7.76	2.831			1

*Note: Min = minimum score; Max = maximum score; SD = standard deviation. ** $p < 0.01$.*

In internationally standardized gifted assessment systems, scores are typically converted from raw scores into standard scores or percentile ranks to enable comparison with age-based normative samples. This approach ensures comparability across individuals and supports decision-making in screening and identifying giftedness (Pfeiffer, 2017; Pfeiffer, 2008). In the present study, artistic giftedness scores were computed using a composite standardized score to facilitate comparison and classification of levels of artistic giftedness. The composite score was calculated using the following formula:

$$\text{Composite Score} = 100 + 15 \times \frac{X - \mu}{\sigma}$$

Where X represents the individual's raw score, μ denotes the sample mean, and σ represents the sample standard deviation. This approach is consistent with established recommendations for the use of composite standardized scores in the interpretation and classification of giftedness levels (Pfeiffer, 2008). The resulting composite scores have a mean (M) of 100 and a standard deviation (SD) of 15. As presented in Table 2 below, this standardized scoring system allows for the differentiation of ability levels ranging from very low to talented, with the talent level

conceptualized as a high level of artistic giftedness within a developmental framework (Gagné, 2015; Subotnik, et al., 2011).

Table 2. Levels of artistic giftedness based on composite standardized scores

No.	Level	Score range	Frequency	Percentage (%)
1	Very low	≤70	2	0.7
2.	Low	70-79	6	2.1
3.	Below average	80-84	19	6.7
4.	Average	85-115	219	76.8
5.	Gifted	116-130	22	7.7
6.	Talented	≥130	17	6.0

Note: Classification is based on standardized scores with a mean of 100 and a standard deviation of 15.

Table 2 indicates that the distribution of artistic giftedness among first-year students generally approximates a normal distribution, with the majority concentrated at the average level (76.8%). This suggests that most students exhibit a typical level of artistic giftedness relative to the within-sample standardized score ($M = 100$, $SD = 15$), with no substantial skew toward either the lower or higher ends. The lower levels, including very low, low, and below-average categories, account for only about 9.5%, indicating that relatively few students demonstrate limited artistic giftedness. Notably, students classified as gifted (7.7%) or talented (6.0%) constituted 13.7% of the sample. This proportion is broadly consistent with expectations under a normal distribution and suggests the presence of a meaningful group of students with relatively high levels of artistic giftedness. This finding has important practical implications, highlighting the need for early identification and the development of appropriate enrichment programs to foster high-potential students within the university context.

Table 3. Gender differences in levels of artistic giftedness

No.	Domain	Gender	M	SD	F	p
1.	Cognitive ability	Male	13.32	3.794	0.018	0.892
		Female	13.41	4.304		
2.	Creativity	Male	8.05	2.658	0.000	0.984
		Female	8.04	2.593		
3.	Artistic giftedness	Male	7.91	2.664	0.190	0.663
		Female	7.73	2.886		

Note: M=mean; SD = standard deviation. F and p values are based on one-way analyses of variance (ANOVA).

4.2. Predictors associated with artistic giftedness among first-year students

The regression results indicate that the model demonstrated an acceptable level of fit within the context of exploratory analysis using cross-sectional data. The multiple correlation coefficient ($R = 0.814$) suggests a relatively strong association between the independent variables and artistic giftedness. The adjusted coefficient of determination (adjusted $R^2 = 0.660$) indicates that the model accounted for 66.0% of the variance in artistic giftedness, reflecting substantial explanatory power of the predictor variables.

The Durbin-Watson value of 1.517 suggested no substantial violation of the assumption of independence of residuals. In addition, inspection of the residual plots indicated no serious violations of the assumptions of normality and homoscedasticity.

Table 4. Summary of the regression model predicting artistic giftedness from cognitive ability and creativity

Model	R	Adjusted R ²	Standard Error of the Estimate	Durbin–Watson
1	0.814	0.660	1.652	1.517

Note: Independent variables: Cognitive Ability, Creativity; Dependent variable: Artistic Giftedness.

Table 5. Multiple regression model predicting artistic giftedness from cognitive ability and creativity

Predictor	B	β	t	p	VIF
Cognitive ability	0.154	0.228	4.017	< 0.001	2.677
Creativity	0.678	0.621	10.951	< 0.001	2.677

Note: Dependent variable: Artistic Giftedness.

The results of the multiple regression analysis indicate that the overall model demonstrated substantial explanatory power in predicting artistic giftedness ($R = 0.814$, adjusted $R^2 = 0.660$), accounting for 66.0% of the variance in artistic giftedness. Both cognitive ability and creativity emerged as statistically significant predictors of artistic giftedness ($p < 0.001$). Specifically, creativity exhibited a larger standardized regression coefficient ($\beta = 0.621$) than cognitive ability ($\beta = 0.228$), indicating a more prominent predictive role within the model.

Multicollinearity diagnostics further supported the robustness of the regression estimates. The variance inflation factor (VIF) values for both predictors were identical ($VIF = 2.677$) and well below commonly accepted threshold levels, suggesting no problematic multicollinearity and ensuring the stability and reliability of the parameter estimates. Taken together, these findings suggest that artistic giftedness is jointly influenced by cognitive ability and creativity, with creativity functioning as the central explanatory component in accounting for individual differences in artistic giftedness.

4.3. Discussion

The findings of the present study indicate that, within the sample of first-year students at Hanoi National University of Education, a substantial subgroup demonstrates notable artistic potential. This result is consistent with prior research on talent development in educational contexts, which suggests that during the early years of university education, giftedness tends to manifest as developmental potential rather than as clearly differentiated high-level achievements. This pattern may be attributed to the limited time and opportunities students have had to engage in specialized and domain-specific training (Renzulli, 1986; Arensbergen & Thunnissen, 2015). These findings underscore the importance of interpreting artistic giftedness among first-year students within a long-term developmental framework, rather than expecting early manifestations of high-level performance.

Although no statistically significant gender differences were observed, minor variations in mean scores between male and female students suggest that learning experiences and contextual factors may exert some influence on the expression of artistic potential. At the first-year level, artistic giftedness appears to exist predominantly in a latent form; therefore, gender-related differences should be conceptualized as dynamic rather than fixed, subject to change over time and strongly influenced by the educational environment. This interpretation aligns with developmental perspectives that emphasize the malleability of talent trajectories during the early stages of higher education.

From a structural perspective, the results demonstrate that artistic giftedness is constituted through the interaction of cognitive ability, creativity, and domain-specific artistic aptitude. This

conceptualization is consistent with multidimensional models of giftedness, which posit that talent emerges from the integration of multiple components rather than from a single underlying trait. Within educational settings, empirical studies have shown that both cognitive ability and creativity contribute to the development of domain-specific competencies, particularly in fields requiring imagery-based thinking and expressive performance, such as the arts (Subotnik, et al., 2011; Runco & Jaeger, 2012). The strong intercorrelations among these components in the present study further reinforce the view that artistic giftedness cannot be disentangled from its cognitive foundations and creative processes.

Moreover, regression analyses revealed that creativity emerged as the most powerful predictor of artistic giftedness, whereas cognitive ability made an independent but comparatively smaller contribution. This pattern is consistent with theoretical perspectives that conceptualize creativity as a mediating mechanism through which cognitive resources are transformed into domain-specific expressions of talent in the arts (Amabile, 2012; Sternberg, 2005). For first-year students, this relationship likely reflects an early developmental stage in which the structural components of giftedness are beginning to cohere but have not yet reached a stable configuration. Accordingly, the regression findings not only explain the current distribution of artistic giftedness but also point to its potential evolution into fully developed artistic talent as students progress through subsequent stages of education and training.

International research consistently emphasizes that early identification, combined with learning environments rich in creative opportunities and supportive of experimentation and personal expression, constitutes a key condition for fostering the development of artistic giftedness in educational contexts (Renzulli, 1986; Pfeiffer, 2015). From this perspective, the present findings highlight the need to establish appropriate educational orientations and targeted interventions to support and nurture artistic potential among teacher education students from the early stages of their university training.

4.4. Limitations and future directions

The present study has several limitations that should be considered. First, the modest and institution-specific sample size and significant gender imbalance may not fully reflect the artistic giftedness of the participants. Second, the sample was restricted to a single institution, which may limit the generalizability of the findings. Third, the cross-sectional design does not permit the examination of developmental changes in artistic giftedness over time. Fourth, reliance on self-report data may introduce subjective bias. Fifth, other influencing factors, such as psychological characteristics and regional specificities, have not yet been explored. Therefore, future research should expand sampling across multiple institutions and academic years, employ longitudinal designs to capture developmental trajectories, and integrate multi-method and multi-informant approaches to more comprehensively examine the factors influencing the development of artistic talent among university students.

5. Conclusions

The findings of this study on artistic giftedness among first-year students at Hanoi National University of Education provide preliminary evidence into the nature of artistic talent. First, the results indicate that a subgroup of students within the sample demonstrates relatively high artistic potential, indicating the need for further screening and appropriate developmental support. Second, no statistically significant gender differences were observed in cognitive ability or levels of creativity, nor were there any significant gender differences in overall artistic giftedness. Third, both cognitive ability and creativity emerged as meaningful predictors of artistic giftedness; however, creativity was the more significant predictors of artistic giftedness, with creativity

showing the stronger predictive role. These findings suggest that creativity may be an important component to consider when assessing artistic giftedness among university students. However, the results should be interpreted in light of the study's limitations, including the use of self-report measures and data collected from a single institution. Future research involving multiple universities and diverse assessment methods is needed to further validate and extend these findings.

Notes for contributors: Dr Dao Minh Duc is a lecturer at School of Educational Sciences, Hanoi National University of Education (HNUE), Vietnam. Ta Phuong Hong is a specialist at Institute of Clinical Psychology, Vietnam. Author 1: conceptualization, methodology, writing original draft, supervision, project administration, validation, writing- review & editing; author 2: investigation, formal analysis, data curation.

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Appendix. Item analysis and internal consistency of the artistic giftedness screening scale

No.	Item	Item-Total Correlation	Cronbach's Alpha if Item Deleted
Cognitive ability		$\alpha = 0.891$	
1	I can learn difficult academic content easily.	0.754	0.862
2	I use a rich vocabulary in both writing and communication.	0.737	0.866
3	I can quickly acquire and retain new information.	0.746	0.865
4	When encountering unfamiliar words, I read out aloud in order to understand their meaning.	0.693	0.876
5	I complete assigned tasks accurately and according to requirements.	0.740	0.866
Creativity		$\alpha = 0.875$	
6	I view and explore things in life from a scientific perspective.	0.776	0.810
7	I think independently and rarely imitate others.	0.740	0.843
8	I create new games, stories, poems, sayings, or songs.	0.765	0.820
Artistic giftedness		$\alpha = 0.885$	
9	I have demonstrated talents in singing or visual arts since childhood.	0.800	0.816
10	I enjoy participating in artistic activities such as singing or drawing.	0.757	0.854
11	I can accurately reproduce or imitate artworks, songs, or artistic objects.	0.774	0.840