

Art-Based Curriculum to Cultivate Students' Competency in Secondary Vocational School in China: The Mediating Role of Cross-disciplinary Connections

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Abstract

An increasing emphasis on holistic development in students has sparked interest in the impact of arts-based curriculum and teaching approaches in the field of education. Arts education has been shown to increase students' creativity, critical thinking, and emotional intelligence. Although the potential benefits of arts education are widely recognised, more in-depth empirical studies are needed to examine its impact on student achievement and academic performance. In order to better understand how art-based instruction and curriculum affect secondary vocational school students' artistic proficiency and academic achievement, a quantitative study was conducted. Both the moderating effect of learning styles and the mediation impact of cross-disciplinary links were intended to be investigated. A quantitative, cross-sectional research design was used for the study. A systematic sampling procedure was used to choose a sample of 384 secondary vocational school students. Participants filled out questionnaires to assess their artists ability, academic achievement, learning methods, and the extent to which cross-disciplinary links were present in their educational experiences. The Amos software was used to analyze the data, which included mediation and moderation analyses. The findings suggest that cross -disciplinary connections have an important mediating role in the relationship between arts curricula, instructional models, students' competencies, and academic achievement. In these interactions, learning styles were identified as moderators, highlighting the necessity for personalized instructional tactics.

Keywords: Arts Education, Art-Based Curriculum, Teaching Method, Cross-Disciplinary Connections, Artistic Competency, Academic Performance, Learning Styles

Introduction

In line with new standards, general education has shifted its priorities away from rote learning, academic content for understanding overarching concepts and developing thinking skills fundamental to all subjects. For example, the Common Core standards for language, arts, and mathematics emphasize understanding core ideas and applying knowledge through higher-level thinking skills (Council, 2012). Arts education refers to training in subjects such as visual arts, music, theatre and crafts (Tadesse, 2022). The purpose of arts-based learning is not to create art or to educate new artists, it is to renew academic subjects and to develop the competences needed for education and working life (Meltzer, 2020). Numerous studies have shown that participation in the arts is associated with better performance, higher levels of creativity and richer peer relationships (Bowen, 2023; Tang, 2022; Corbisiero-Drakos, 2021; Hardiman, 2018).

Arts education is valuable in many aspects of student growth. Arts education contributes significantly to the development of critical thinking skills (Allina, 2018). Students are exposed to a variety of styles, techniques, and perspectives while participating in arts activities. This exposure encourages children to research, interpret, and evaluate a variety of works of art, thereby enhancing their critical thinking skills (Snow et al., 2020). Students acquire insights into human experiences as they explore the emotions of characters or subjects depicted in their work, strengthening their capacity to empathize with others and connect emotionally (Christodoulakis et al., 2021). These problem-solving abilities transcend the field of art and become applicable to a variety of academic and real-world circumstances. Academic achievement continues to be a critical determinant of school success and future possibilities for pupils (Alshatti et al., 2020).

Although the potential benefits of arts education are widely recognised, more in-depth empirical studies are needed to examine its impact on student achievement and academic performance (Parker et al., 2021). This study aimed to fill this gap by investigating the impact of arts-based curriculum and teaching methods on students' artistic competency and academic achievement. This study is important because it seeks to provide empirical evidence to the ongoing discourse on the role of arts education in promoting circular development in students (Parker et al., 2021). The first part of the research question was to assess the extent to which the implementation of arts-based curriculum improved students' artistic competency. The possible impact of arts education on students' academic achievement in other areas is the focus of the second part of this research challenge. This study explored the mediating role of interdisciplinary relationships between arts education and academic achievement.

Hypotheses Development

Art-Based Curriculum and Students Artistic Competency

Students have the unique opportunity to express their ideas and emotions through drawing, painting, sculpture and multi-media art, which foster their creativity and self-expression (Hallam et al., 2022). According to research, art-based education encourages divergent thinking and encourages originality and fluency in artistic expression (Kuo, 2022). Students who engage in arts-based activities grow more self-assured in their capacity to express difficult feelings and concepts through art (Dunphy et al., 2021). A focus on the arts in the curriculum is essential for helping pupils improve their technical artistic abilities as well as their creativity. Students study numerous techniques, design principles, and processes of art creation as they participate in systematic art teaching, building a solid foundation for their

artistic development (Shih, 2020). Additionally, Exposure to artistic expressions from different cultures and traditions in the process of learning and interpreting various art forms also develops cultural appreciation (Lee & Portillo, 2022).

H1: There is a significant positive relationship between the implementation of an art-based curriculum and students' artistic competency

Art-Based Curriculum And Students' Academic Performance

Students are greater engaged while gaining knowledge through the arts because they are more enthusiastic and interested by collaborating in and taking note of innovative and creative activities (Snow et al., 2020). Art-based curriculum improves secondary vocational students' cognitive abilities, inclusive of spatial reasoning, hassle-solving, and important thinking, all of which help them perform higher academically of their main subjects. By strengthening cross-disciplinary linkages and allowing students to understand issues in a wider context, art integration improves knowledge retention and skill transfer (Mulyadi et al., 2022). Additionally, participating in artistic pursuits helps students improve their communication and expression skills, which enhances their performance in written and oral academic expression as well as oral presentations. Additionally, as students utilize art as a medium to express and manage their emotions, promoting a good learning environment and improving interpersonal skills, art-based education helps social and emotional development (Fan & Zhong, 2022). Arts-based approach to learning enables participants to discover new aspects of themselves and develop their professional competences (Meltzer, 2020).

H2: There is a significant positive relationship between the implementation of an art-based curriculum and students' academic performance.

Teaching Methods and Student Artistic Competency

One of the most common teaching methods in art education is still the traditional classroom setting, which is characterized by teacher-led lectures and demonstrations. This method frequently gives students the fundamental background information and technical know-how they need to have a firm grasp of the concepts and methods of the arts (Gong, 2021). However, a few research contend that conventional coaching may additionally limit students' self-expression and creativity because of the point of interest located on adhering to prescribed strategies and guidelines (Hande et al., 2020). Project-based and experiential teaching methods emphasize student-centered activities, giving students the opportunity to experiment with various artistic media, allowing students to take control of their own creative process and achieve deeper and more unique artistic expression (Gong, 2021). Students have new opportunities to create and express themselves artistically because to the incorporation of digital technologies including graphic design software, multimedia applications, and virtual reality. According to studies, technology-enhanced training can help students become more proficient in technical concepts and digital art techniques (Swanzy-Impraim et al., 2023). With the use of technology, students may communicate and collaborate more since they can get rapid feedback from their peers and access a variety of digital materials, which broadens their horizons as artists.

H3: There is a significant positive relationship between teaching methods and students' artistic competency

Teaching Methods and Students Performance

The literature highlights the significant influence of teaching methods on the performance of vocational students. Active learning, project-based learning, and blended learning have been shown to positively impact student achievement by promoting engagement, relevance, and skill development. (Soesmanto et al., 2023). Active learning methodologies, characterized by student-centered approaches that engage learners in critical thinking and problem-solving activities, have been extensively studied in vocational education. Li & Ji, (2021) emphasize the positive impact of active learning strategies on student performance, highlighting increased retention rates and deeper conceptual understanding. In the vocational context, hands-on activities, simulations, and real-world projects align with the practical nature of vocational subjects, fostering skill development and enhancing performance (Robillos, 2020). Project-based learning (PBL) emphasizes collaborative, hands-on projects that enable students to apply theoretical knowledge to real-world problems. In vocational education, PBL fosters the development of critical thinking, communication, and teamwork skills, which are essential for success in the workforce (Li & Ji, 2021). Studies have demonstrated that PBL positively influences vocational student performance by promoting deeper learning, motivation, and engagement (Zhao et al., 2020). By contextualizing learning within authentic vocational scenarios, PBL enhances the relevance and applicability of academic content, leading to improved performance outcomes (Loi & Thanh, 2022). Blended teaching combines traditional face-to-face instruction with online learning activities, offering vocational students a flexible and personalized learning experience. Blended teaching models, which integrate classroom interactions with digital resources and virtual discussions, contribute to enhanced student performance in vocational courses. By leveraging the strengths of both online and offline learning modalities, blended approaches cater to diverse learner needs and preferences, fostering deeper engagement and knowledge acquisition. Moreover, blended learning enables vocational educators to optimize instructional delivery and adapt teaching methods based on student feedback and performance data (Khamsuk & Whanchit, 2021).

H4: There is a significant positive relationship between the Teaching method and students' academic performance.

Cross-Disciplinary Connections as a Mediator

Cross-disciplinary links within art-based curricula are gaining popularity as a powerful tool for improving students' artistic proficiency. Students' creativity, self-expression, and technical creative abilities are naturally fostered by art-based education (López-Mulnix, 2019). According to research, incorporating many academic subjects into the art curriculum improves students' capacity to creatively communicate complex ideas and emotions. Students improve their artistic abilities when they are exposed to different ideas and perspectives, which in turn leads to more nuanced and innovative creations. Because of these connections between fields, students can try new things while expressing themselves creatively, resulting in original, complex works of art (Brunn, 2022). Students learn to analyze and interpret data from many sources as they draw links between diverse academic subjects, developing their critical thinking and association-making skills. Their problem-solving skills and critical thinking are applied to other academic areas as well as their artistic talents (Robinson & Bellert, 2020).

Art-based curricula promote learning transfer by encouraging students to investigate links between art and other courses, such as mathematics, science, history, or language arts.

Students can apply knowledge and abilities they have obtained in one context to another when they understand how many academic fields are interconnected (Macrides et al., 2022). Their capacity for making connections and drawing insightful comparisons improves their comprehension of the material in both artistic and non-artistic subjects, which boosts their academic achievement. Students' academic abilities are further strengthened by the cognitive enrichment that comes from an arts-based education (Fernández-Santín & Feliu-Torruella, 2020). Cross-disciplinary connections' interdisciplinary aspect also encourages motivation and involvement in the learning process. Students are more committed to their education when they recognize the value and practical applications of their study. Students who are driven and involved achieve more academically across the board, according to research. Students' overall academic success is supported by the supportive learning environment fostered by the cross-disciplinary links in the art program (Hunte et al., 2021).

Cross-disciplinary links build a bridge between several academic fields and the teaching approach used in art education (Liu, 2023). Students are exposed to a variety of ideas, viewpoints, and cultural influences through the integration of different courses within the art curriculum, which enriches and expands their artistic expression. Cross-disciplinary links enables students to get inspiration from many fields, resulting in more creative and multifaceted artistic productions. Additionally, investigating connections between art and other courses develops students' critical thinking and problem-solving abilities, allowing them to tackle creative issues in a more nuanced and complicated way (Beiderbeck et al., 2021). The curriculum is made more interesting and relevant for students by incorporating a variety of courses and practical applications. According to Broemmel et al., (2021), links throughout unique instructional fields allow students practice their understanding and skills in new conditions, which improves their instructional success. Additionally, publicity to multidisciplinary gaining knowledge of opportunities improves students' cognitive abilities, consisting of problem-fixing, analytical reasoning, and important questioning. Through cross-disciplinary linkages, secondary vocational students construct a bendy talent set that can be utilized in a whole lot of educational contexts, encouraging cognitive flexibility and adaptableness.

H5a: Cross-disciplinary connections mediate the relationship between the art-based curriculum and students' artistic competency.

H5b: Cross-disciplinary connections mediate the relationship between the art-based curriculum and students' academic performance.

H5c: Cross-disciplinary connections mediate the relationship between teaching method and students' artistic competency.

H5d: Cross-disciplinary connections mediate the relationship between teaching method and students' academic performance

Learning Style as a Moderator

Some students learn best through visuals, others through auditory cues, and yet others through hands-on experience. Cross-curricular connections in art-based curricula encourage student creativity and artistic expression by introducing them to other ideas and cultures. Based on their chosen learning styles, different learners may benefit differently from cross-disciplinary linkages, according to Skulmowski, (2023). Visual learners might benefit in cross-disciplinary connections that involve the visual arts, while auditory learners might flourish in

those that involve verbal instructions. Similar to visual learners, anesthetic learners might benefit more from cross-disciplinary experience learning (Chen & Chen, 2021).

Similar to how interdisciplinary fosters critical thinking and knowledge transmission, it also improves academic performance by offering a thorough and integrated learning experience. Based on their chosen learning styles, different learners may benefit from cross-disciplinary linkages in different ways, according to learning style as a moderator (Yotta, 2023). When given visual aids, auditory learners may flourish in debates, while aesthetic learners may flourish in hands-on activities. Teachers can modify their instructional strategies to maximize students' academic progress by comprehending how various learning styles interact with cross-disciplinary linkages (Skulmowski, 2023). Personalizing lessons for individual students makes the classroom a more welcoming and productive place for everyone. This enables them to reap the benefits of interdisciplinary links and boosts their performance in a wide range of courses.

H6a: Learning styles moderate the relationship between cross-disciplinary connections and students' artistic competency.

H6b: Learning styles moderate the relationship between cross-disciplinary connections and students' academic performance.

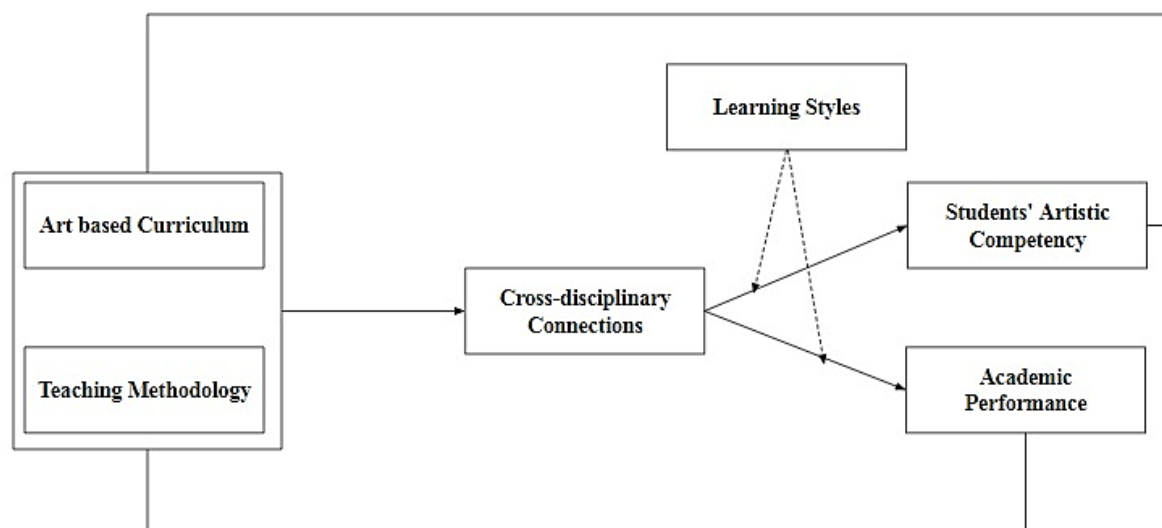


Figure 1: Conceptual Framework

Methodology

Research Design

The study used a quantitative, cross-sectional research design to examine the effects of an art-based curriculum and teaching approach on the artistic proficiency and academic performance of vocational students. SEM was an appropriate method for evaluating the mediating function of interdisciplinary links in this research because it allowed for the analysis of complicated correlations between variables, including direct and indirect effects (Preacher, 2010). Through the use of SEM and Amos, the researchers were able to investigate the direct and indirect effects of the art-based curriculum on students' artistic proficiency and academic achievement, which were then moderated by links between disciplines.

Participants

The study sought to investigate the mediating function of inter-disciplinary relationships between the art-based curriculum and the desired outcomes. Students in secondary vocational schools from various grade levels and institutions made up the target audience. To ensure diversity and the generalizability of the findings, the research was carried out in several secondary vocational schools, with students from various backgrounds and demographics included to capture a complete representation of the vocational student body. Stratified random sampling was the method of sampling that was employed for this study as it has the low level of biasness (Avotra et al., 2021; Nawaz & Guribie, 2022; Yingfei et al., 2021). Students from each participating school were selected at random. The estimated sample size was determined using the formula for calculating sample size in a cross-sectional study. A sample size of 250 participants was intended, taking into account the huge number of secondary vocational school students, a confidence interval of 95%, and a margin of error of 5% (Nawaz et al., 2019, 2021). To avoid baseness, we distributed 500 questionnaire out of which we received 384 completed questionnaire which were used for further analysis.

Data Analysis

The software applications Statistical Package for AMOS 24 are utilized for data analysis. The reliability analysis is displayed in Table 2. The independent variables in this study are Art Based Curriculum and teaching method, while the dependent variables are student's artistic connection and academic performance. Cross-disciplinary connection is mediating and Learning Style is moderating variable. Each variable has an acceptable alpha value for reliability.

Table 1

Reliability Analysis

Variables	Items	Cronbach's Alpha value
Art Based Curriculum	4	0.880
Teaching Methods	4	0.712
Cross-disciplinary Connection	4	0.719
Students Artistic Competency	4	0.756
Academic Performance	5	0.852
Learning Style	4	0.823

Based on a sample size of 384 respondents, the table 2 gives descriptive data for six variables. The respondents gave an average rating of 4.00 on a scale of 1 to 5, with a standard deviation of 0.63. The teaching method, on the other hand, had a higher mean rating of 4.25, suggesting a positive perception among respondents, and the standard deviation of 0.56 indicates less variability in the evaluations. Similarly, with an average rating of 4.27, the cross-disciplinary relationship was highly appreciated, and the responses were relatively consistent around the mean, as evidenced by a standard deviation of 0.56. Students' creative skill, on the other hand, obtained an average rating of 3.95, with substantial diversity in replies (standard deviation of 0.67). The average rating for academic performance was 4.07, with modest variability (standard deviation of 0.69). Finally, the respondents' learning style received an average score of 3.90, with a greater standard deviation of 0.77 indicating significant variation in the assessments.

Table 2

Descriptive Statistics

Variables	Mean	Std. deviation	N
Art Based Curriculum	4.00	0.63	384
Teaching Method	4.25	0.56	384
Cross-disciplinary Connection	4.27	0.56	384
Students Artistic Competency	3.95	0.67	384
Academic Performance	4.07	0.69	384
Learning Style	3.90	0.77	384

Confirmatory Factor Analysis

Table 3 shows the fitness test results for a Pooled Confirmatory Factor Analysis (CFA) model. These tests evaluate how well the model fits the data using various fit indices. The Root Mean Square Error Approximation (RMSEA) returned a value of 0.130 for the absolute fit. Because this value is less than the acceptable threshold of 0.80, the model's absolute fit to the data is deemed reasonable, according to the study by (Breyton et al., 2021). The Comparative Fit Index (CFI) yielded a value of 0.927 when measuring incremental fit. Because this number above the acceptable threshold of 0.90, the model's incremental fit is rated satisfactory based on Gundogan's (2022) reference. The Chi Square divided by the Degrees of freedom (Chisq/df) for the parsimonious fit was estimated as 1.389. According to the literature reference provided by Duffy et al (2017), because this number is less than the acceptable threshold of 3, the parsimonious fit of the model to the data is adequate.

Table 3

Pooled CFA Model Fitness Tests

Name of Category	Name of index	Index full name	Value in analysis	Acceptable value	Literature
Absolute Fit	RMSEA	Root Mean Square of Error Approximation	0.130	<0.80	(Breyton et al., 2021), (Nawaz et al., 2023)
Incremental Fit	CFI	Comparative fit index	0.927	>0.90	(Gundogan, 2022)
Parsimonious Fit	Chisq/df	Chi Square / Degrees of freedom	1.389	<3	(Duffy et al., 2017)

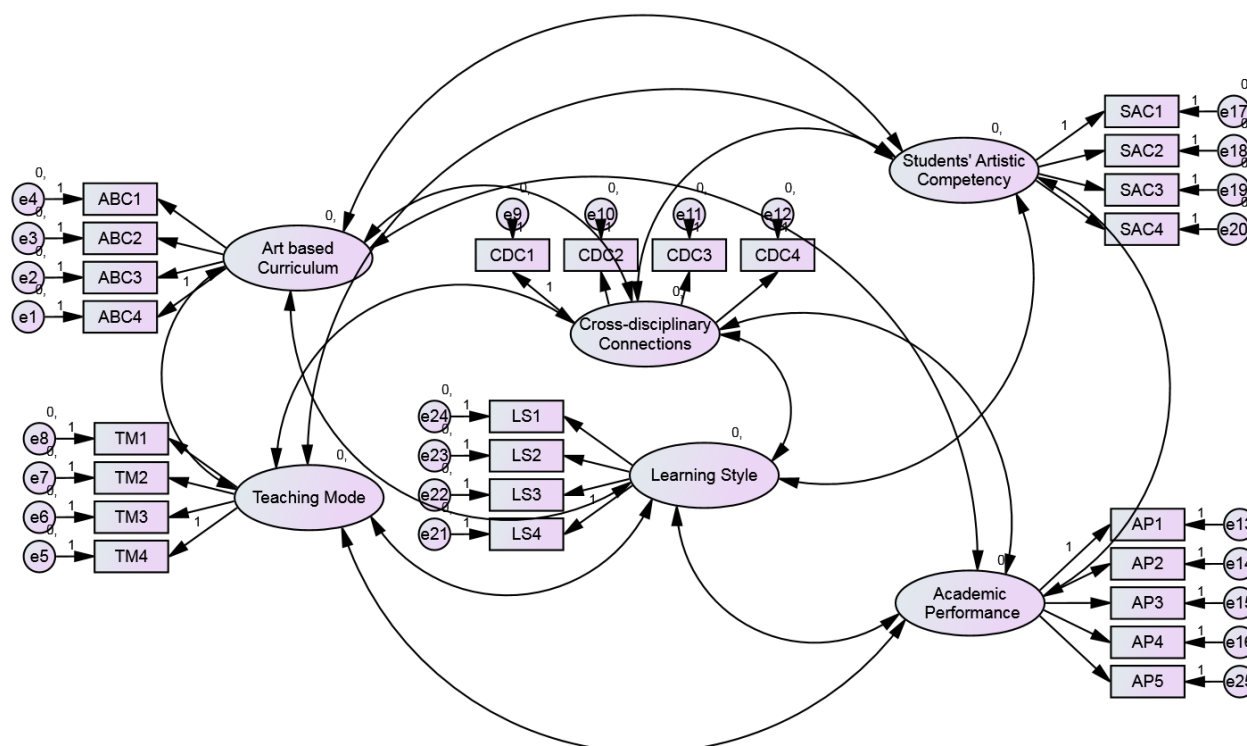


Figure 2. Pooled Confirmatory Factor Analysis

Table 4 and Figure 2 displays the item factor loadings and scale reliability scores for each scale in the study. The factor loadings show the strength of each item's link to its underlying construct. The "Art Based Curriculum" scale has a strong connection with its underlying construct, as seen by ABC1's high factor loading of 0.874. This construct's scale dependability is likewise commendable, at 0.880. Other items on the same scale, however, such as ABC2, ABC3, and ABC4, have lower factor loadings, indicating weaker associations with the construct. Moving on to the "Teaching Method" scale, TM1 has a moderate factor loading of 0.703, indicating a relatively good correlation with the construct, and a scale reliability of 0.712. TM4, on the other hand, has a weaker association with a factor loading of 0.627. CDC1 has a moderate factor loading of 0.727 and a reasonable scale dependability of 0.719 for the "Cross-disciplinary Connection" scale. Higher factor loadings indicate greater correlations in CDC2 and CDC3, while CDC4 has a lower factor loading. SAC1 shines out on the "Students Artistic Competency" scale, with a high factor loading of 0.784 and a scale reliability of 0.756, showing a strong association with the construct. SAC2 and SAC3, on the other hand, have smaller factor loadings, indicating weaker associations. Most items on the "Academic Performance" scale have modest factor loadings, with AP1 having a value of 0.670 and the scale having good internal consistency with a reliability score of 0.852. However, factor loadings for AP4 and AP5 are smaller, indicating weaker connections with the construct. Finally, the "Learning Style" scale demonstrates moderate factor loadings for LS1 and LS3, with values of 0.637 and 0.705, respectively, as well as an adequate scale reliability of 0.823. With a factor loading of 0.755, LS4 has a greater association than LS2, which has a weaker relationship.

Table 4

Factor loading of items

Scale	Items	Factor Loadings	Scale Reliability
Art Based Curriculum	ABC1	0.874	0.880
	ABC2	0.598	
	ABC3	0.820	
	ABC4	0.755	
Teaching Mode	TM1	0.703	0.712
	TM2	0.760	
	TM3	0.761	
	TM4	0.627	
Cross-disciplinary Connection	CDC1	0.727	0.719
	CDC2	0.745	
	CDC3	0.802	
	CDC4	0.561	
Students Artistic Competency	SAC1	0.784	0.756
	SAC2	0.590	
	SAC3	0.665	
	SAC4	0.773	
Academic Performance	AP1	0.670	0.852
	AP2	0.757	
	AP3	0.709	
	AP4	0.643	
	AP5	0.599	
Learning Style	LS1	0.637	0.823
	LS2	0.599	
	LS3	0.705	
	LS4	0.755	

Assessment of Discriminant validity

A subtype of construct validity called convergent validity is defined as follows: The concept of "construct validity" describes the degree to which a test designed to measure a certain construct, such as IQ, actually measures that particular trait. The capacity to show that two measurements that are intended to evaluate the same notion are actually evaluating the same phenomenon is known as convergent validity. On the other side, discriminant validity shows that two metrics that are not intended to be connected are in fact not associated. Both types of validity must exist for a construct to have excellent validity. The cutoff level for severe discriminant validity was 0.850, and the cutoff threshold for liberal discriminant validity was 0.900. The HTMT analysis was performed to establish discriminant validity Henseler, Ringle, and Sarstedt (2015). The values in Table 5 demonstrated that the items meet the requirements for discriminant validity.

Table 5

HTMT Analysis

	ABC	TM	CDC	SAC	AP	LS
Art Based Curriculum	x					
Teaching method	0.663	x				
Cross-disciplinary Connection	0.256	0.533	x			
Students Artistic Competency	0.564	0.643	0.422	x		
Academic Performance	0.256	0.352	0.146	0.753	x	x
Learning Style	0.743	0.245	0.643	0.742	0.345	0.254

Table 6 and Figure 3 shows the study's direct effect results, illustrating the links between the hypotheses and their respective causal channels. The table provides lower and upper bounds for effect sizes, as well as p-values for statistical significance. Furthermore, the normalized estimated values reveal information about the strength and direction of these associations. First, a statistically significant association (p-value = 0.001) is revealed for Hypothesis H1, which evaluates the causal chain from Art Based Curriculum (ABC) to Students Artistic Competency (SAC). The standardized estimated value of 0.296 suggests a positive connection, implying that a higher level of art-based curriculum is associated with increased artistic proficiency in children. A statistically significant association (p-value = 0.001) is also observed in Hypothesis H2, which investigates the causal chain from Art Based Curriculum (ABC) to Academic Performance (AP). A positive connection is indicated by the standardized estimated value of 0.391, showing that a higher degree of art-based curriculum is related with improved academic achievement. Following that, a statistically significant link (p-value = 0.001) is observed for Hypothesis H3, which investigates the causal chain from Teaching method (TM) to Students Artistic Competency (SAC). The standardized estimated value of 0.132 suggests a positive connection, implying that a specific teaching modality is associated with higher student creative skill. Finally, Hypothesis H4 investigates the causal link between Teaching method (TM) and Academic Performance (AP), and a statistically significant relationship (p-value = 0.001) is discovered. The standardized estimated value of 0.129 suggests a positive relationship, showing that a certain teaching approach is associated with improved academic performance.

Table 6

Results of direct effects

Hypothesis	Causal Path	Lower Bound	Upper Bound	P-Value	Standardized Estimated
H1	ABC → SAC	0.034	0.165	0.001	0.296
H2	ABC → AP	0.013	0.224	0.001	0.391
H3	TM → SAC	0.052	0.135	0.001	0.132
H4	TM → AP	0.042	0.245	0.001	0.129

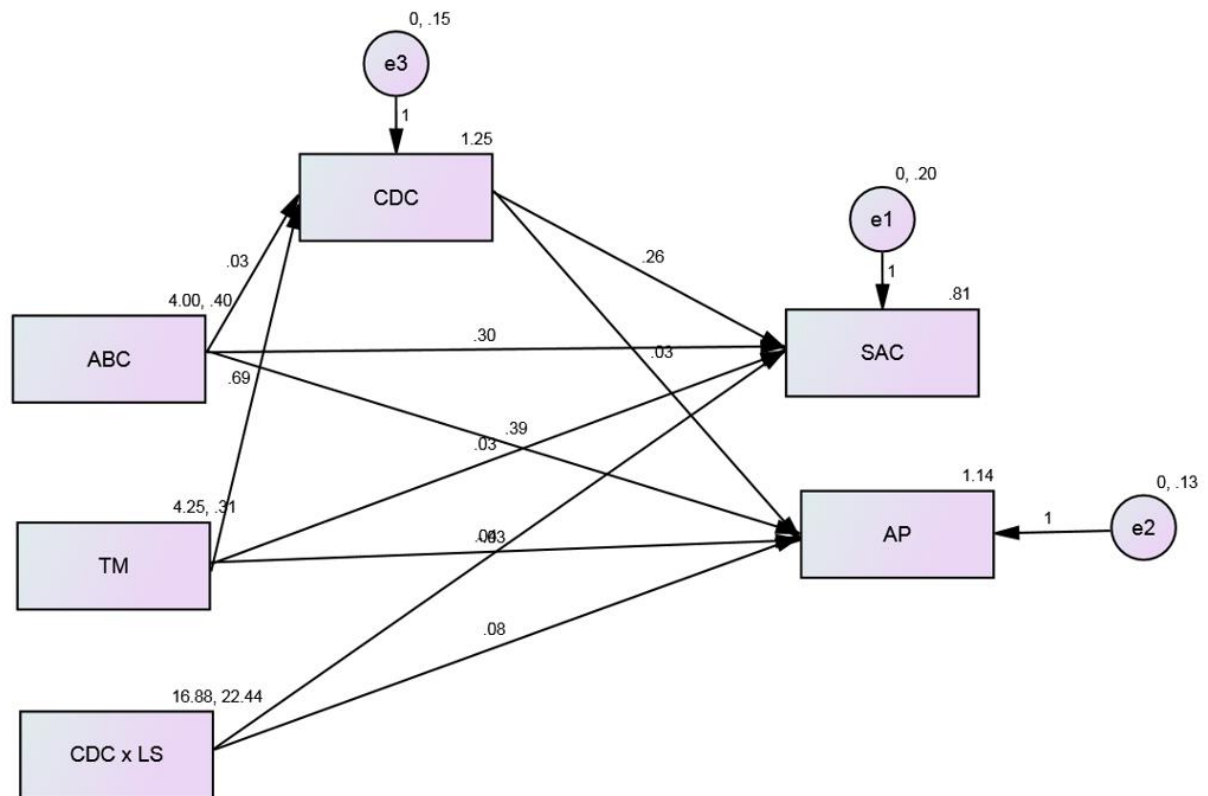


Figure 3: Structural Model

Table 7, Figure 4 and 5 shows partial moderation for all statistically significant hypotheses. First, for Hypothesis LS x CDC → SAC, the interaction between Learning Style (LS) and Cross-disciplinary Connection (CDC) moderates the relationship between Learning Style and Students Artistic Competence (SAC) in a significant way. The initial sample value of 0.042 represents the interaction effect's magnitude. The significant t-value of 8.856 indicates statistical significance, which is confirmed by the low p-value of 0.001. These findings indicate that the combined effects of Learning Style and Cross-Disciplinary Connection play a significant role in determining the effect on Students' Artistic Competence, indicating the need to consider their combined effects when examining this relationship. In addition, for Hypothesis LS x CDC → AP, the interaction between Learning Style (LS) and Cross-disciplinary Connection (CDC) moderates the relationship with Academic Performance (AP) in a significant manner. The sample value of 0.079 indicates that the interaction effect is significant. The astonishingly high t-value of 20.328 indicates statistical significance, and the extremely low p-value of 0.001 bolsters this significance. When examining the impact of Learning Style and Cross-Disciplinary Connection on Academic Performance, it is essential to take into account the combined influence of both variables.

Table 7
Results of Moderation

Hypothesis	Original Sample	T Values	P Values
LS x CDC → SAC	0.042	8.856	0.001
LS x CDC → AP	0.079	20.328	0.001

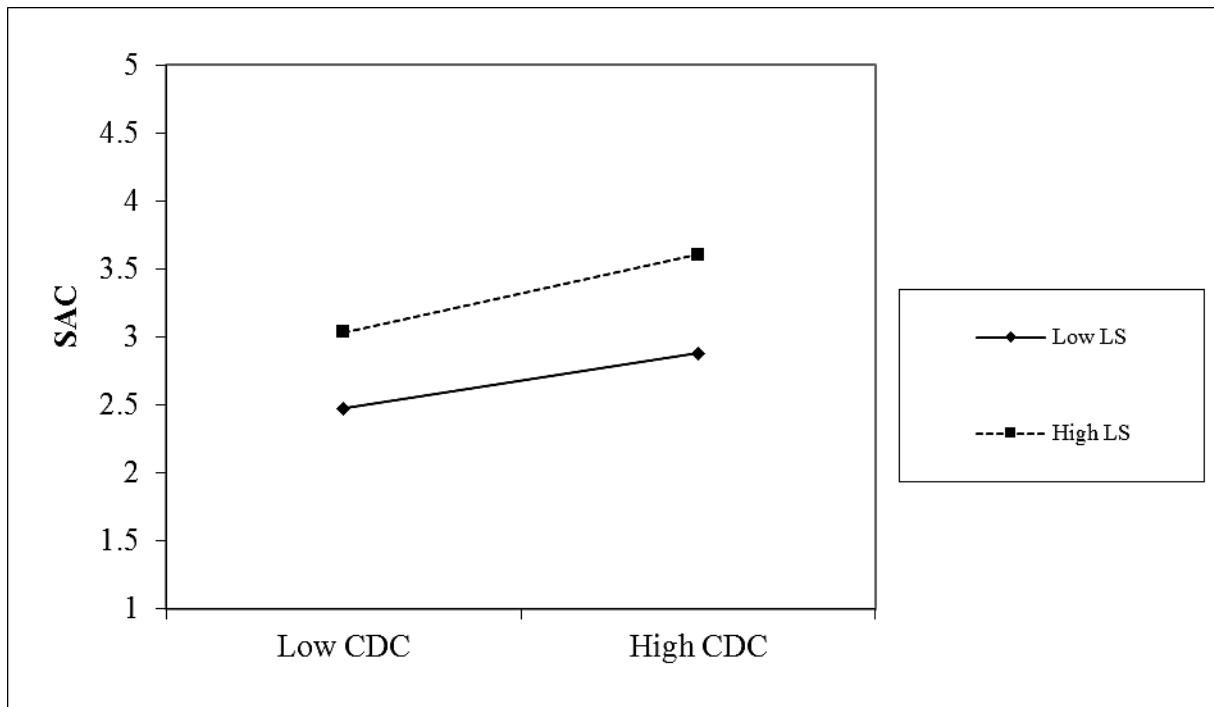


Figure 4: LS as moderator between CDC and SAC

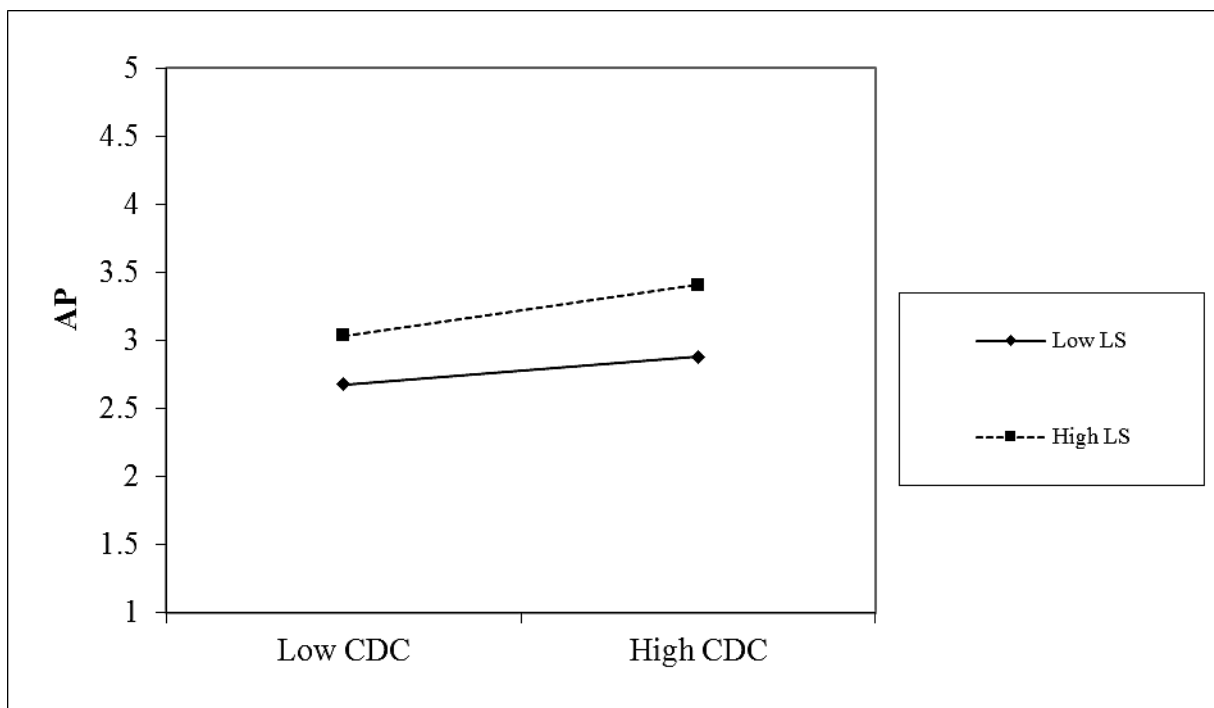


Figure 5: LS as moderator between CDC and AP

Discussion

The outcomes of the study give strong evidence to support hypothesis H1, indicating a significant beneficial association between the implementation of an art-based curriculum and students' artistic competency. Art-based curriculum are crucial to arts education because they teach students to think critically, communicate effectively, and develop technical proficiency in their chosen artistic medium (Costes-Onishi & Kwek, 2023). By exposing students to a variety of viewpoints, historical settings, and cultural influences, the

incorporation of cross-disciplinary links further enhances their artistic expression. Students' creative horizons are widened by this experience, which also develops their capacity to successfully express feelings through art. The findings are consistent with earlier study that emphasized the benefit of an art-based curriculum on pupils' artistic proficiency (Hallam et al., 2022). According to studies, kids who participate in arts-focused classes exhibit higher levels of creativity, critical thinking, and self-confidence in their artistic ability (Forgeard et al., 2021). Students are encouraged to draw inspiration from a variety of academic subjects when cross-disciplinary linkages are included, which results in more creative and multifaceted artistic outputs (Maureen et al., 2022).

The study findings strongly support hypothesis H2, suggesting a considerable favorable association between the implementation of an art-based curriculum and students' academic performance. The inclusion of cross-disciplinary links into the art-based curriculum improves students' grasp of subject matter across multiple academic areas (Mulyadi et al., 2022). As a result, pupils are more prepared to handle academic obstacles from a holistic standpoint, resulting in higher overall academic accomplishment. Literature supports the study's findings by emphasizing the positive effect of arts education on students' academic achievement (H. Li & Ji, 2021). Incorporating art into other disciplines encourages active participation, which leads to improved desire and enthusiasm in learning, ultimately improving students' academic achievement (Snow et al., 2020). Arts-based approach to learning enhances professional and personal competence, as well as the ability to relate oneself to others and to society at large. These qualities are important for finding oneself as a professional and specialised practitioner in current and future working life.

The study shows strong evidence in favor of hypothesis H3, showing a significant positive correlation between teaching style and students' artistic competency. Teachers' teaching method, or approach to instructing pupils, is very consequential to students' educational outcomes. Teaching methods that prioritize student agency, encourage independent inquiry, and foster creative problem solving have a profound effect on students' creative skills (Taherkhani et al., 2022). According to the previous studies, student-centered teaching strategies provide an environment that is suitable for developing artistic talent. These strategies empower students to experiment with many art genres and give them the freedom to own their artistic expressions, which improves their artistic proficiency (Vellanki et al., 2022).

The findings of the study provide substantial support for hypothesis H4, demonstrating a significant positive correlation between teaching method and academic performance. Student-targeted coaching modes were related to advanced instructional achievements due to their consciousness on energetic gaining knowledge of, essential questioning, and problem-solving abilities (Robillos, 2020). Extensive research has shown that student-targeted coaching strategies make contributions to expanded academic engagement, understanding retention, and improved performance throughout numerous topics (Soesmanto et al., 2023). These strategies encourage greater subject-matter comprehension as students actively engage in the learning process, which improves academic success. Traditional teacher-led methods, on the other hand, could not always be successful in enticing pupils to participate, thereby limiting their academic development and performance (Li & Che, 2022).

The study provides substantial empirical evidence for all four hypotheses H5a, H5b, H5c, and H5d that suggest the mediating effect of interdisciplinary links. The art-based curriculum and teaching method significantly affect students' artistic ability and academic achievement

through cross-disciplinary links. Cross-disciplinary linkages expand students' learning experiences and strengthen their cognitive capacities by integrating several academic fields into art education, which improves outcomes (Khanlou et al., 2022). Cross-disciplinary linkages are important for fostering creativity, critical thinking, and problem-solving abilities, according to research (Alshatti et al., 2020). A holistic grasp of knowledge and its applications is fostered by integrating many subjects into the art-based curriculum. This allows students to create meaningful links between various academic fields. The results imply that interdisciplinary relationships influence the effects of an art-based curriculum and instructional approach on students' creative proficiency and academic achievement (Zhou & Thompson, 2023).

Strong empirical evidence supports hypotheses H6a and H6b, confirming the moderating effect of learning preferences in the association between cross-disciplinary links and students' creative proficiency and academic achievement. Each kid has a unique learning style, and depending on their preferences, the usefulness of cross-disciplinary links in fostering artistic competency and academic success differs (Broeckerhoff & Magalhães Lopes, 2020). When students are able to tailor their learning to their personal preferences for visual or verbal learning, their performance in the classroom improves (Felder & Silverman, 1988; Fleming & Mills, 1992). Teachers recognise the need to use differentiated instruction to improve personalised learning outcomes for students. Training should be tailored to accommodate a wide range of learner preferences (Tomlinson, 2017). Learning styles (which can be interpreted as an individual's attitude towards a learning situation) have an impact on the achievement and success of learning goals (Cassidy, 2004). According to Sternberg and Zhang (2014), matching learning styles with teaching methods can improve academic achievement. Progressing with appropriate learning styles will help students to achieve excellent academic performance in any subject they are learning (Omar et al., 2015).

Conclusion

Focusing on the moderating influence of learning styles and the mediating role of cross-disciplinary linkages, this study looked at the effect of an art-based curriculum and teaching method on students' artistic competency and academic achievement. Findings from this study provide weight to the importance of arts education in secondary vocational schools and give persuasive evidence in favor of the hypotheses. The results confirm that the implementation of an art-based curriculum positively influences students' artistic competency and academic performance. By integrating arts into various subjects and encouraging cross-disciplinary connections, students are exposed to diverse perspectives, enhancing their creative expression and critical thinking abilities. This holistic approach to education nurtures students' artistic talents and fosters a deeper understanding of academic subjects, leading to improved overall academic achievements.

Limitation and Future Directions

Despite the useful insights this study offered, a number of limitations need to be taken into account. Firstly, the research focused on a particular age group of secondary vocational school students, which can also limit the generalization of the findings to different academic tiers. To gain a deeper understanding, future research may examine the effects of art-based curriculum and interdisciplinary connections on artistic proficiency and academic achievement across a range of age groups, from primary to higher education. Second, the study used self-report methods to evaluate students' artistic proficiency, academic success,

and learning preferences. Measures based on self-reporting may be prone to response bias and fall short of accurately capturing the complexity of these dimensions. Future research can include goal assessments, performance reviews, and observations to provide a far better and holistic assessment of students' outcomes. Thirdly, the look at's pass-sectional layout limits the capacity to set up causality between the variables. Longitudinal studies could shed light on how art-based curriculum and interdisciplinary links influence students' creative competence and academic success down the road. In addition, experimental or quasi-experimental methods could be used to investigate the causal relationships between these components in greater depth.

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