

Factors Affecting the Development of Aesthetic Education: A Bibliometric Analysis

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Abstract: Aesthetic education is an education that integrates arts and humanities, which has a positive effect on improving the comprehensive quality of students. As an important part of cultural education, the attention of aesthetic education in academic research has been rising year by year. Based on this, this study used the VOSviewer literature analysis tool to bibliometrically analyze 580 articles from "SCI, SSCI and AHCI" in the Web of Science database from 2014 to 2024, and the results of the analysis identified research trends, emerging themes, and directions for future research and development in this field. The results of the analysis identified research trends, emerging themes, and directions for future research and development in the field. The findings suggest that aesthetic education has undergone a shift from traditional educational teaching methods and art appreciation. With the advancement of information technology, multimedia platforms and digital technologies have become increasingly prominent in education and teaching, both to meet the needs of students' individualized development and to foster their creativity. In addition, this study proposes hot research directions for the future: first, the integration of aesthetic education and interdisciplinary innovation. Secondly, the combination of aesthetic education and digital technology; thirdly, the combination of globalization vision and local excellent traditional culture; fourthly, the research on quantitative evaluation body. This study aims to enrich the theory and practice of aesthetic education, promote the overall development of students, and enhance artistic literacy in the era of digitalization and globalization.

Keywords: aesthetic education; bibliometric analysis; disciplinary integration; traditional culture; educational assessment; teaching strategies

INTRODUCTION

Aesthetic education is one of the most widely discussed topics in academia. It has been defined as a purposeful activity that aims to foster appreciation, reflection, cultural engagement, and experience of the arts (Maxine Green Institute). In recent years, scholars have emphasized the importance of aesthetic education, especially the need to incorporate the arts into the curriculum (D'Olimpio, 2024). Given the critical role of aesthetic education in developing students' overall literacy, some scholars have called for defending and promoting its implementation in educational settings (British Journal of Education). As schools play a crucial role in preparing young people for adult life, it is important to consider how aesthetic education can be effectively integrated into the curriculum (British Journal of Education). Although the importance of aesthetic education is widely recognized, however, it is often overlooked at both the theoretical and practical levels (Denac, 2014). The impact of aesthetic education has been widely explored in academia, but there are still significant gaps in quantitative analysis and systematic argumentation. In this paper, aesthetic education is considered to have a crucial place in school education and teaching, especially in the promotion of morals and values. It helps to shape the individual's personality at the spiritual and cultural levels and influences his or her definition and perception of beauty in art, nature, society, and interpersonal relationships (Shiriyeva, 2020). Through rich artistic experiences and aesthetic pedagogy, aesthetic education lays the foundation for the realization of inclusive and innovative educational goals (Malytska

et al., 2022). Through the bibliometric analysis method, this study systematically analyzes the relevant academic literature to reveal the development path, current trend, and future development direction of aesthetic education in the field of education. The integration of aesthetic education and humanistic literacy is crucial for educational policymakers, scholars, and educational practitioners, which not only helps to promote continuous innovation in the field of education but also provides theoretical and practical contributions to the development of aesthetic education in the education system (Li & Hirunrux, 2023). The insights of this study not only deepen the understanding of the connotation of aesthetic education but also provide useful references for the innovation and development of aesthetic education in the education system.

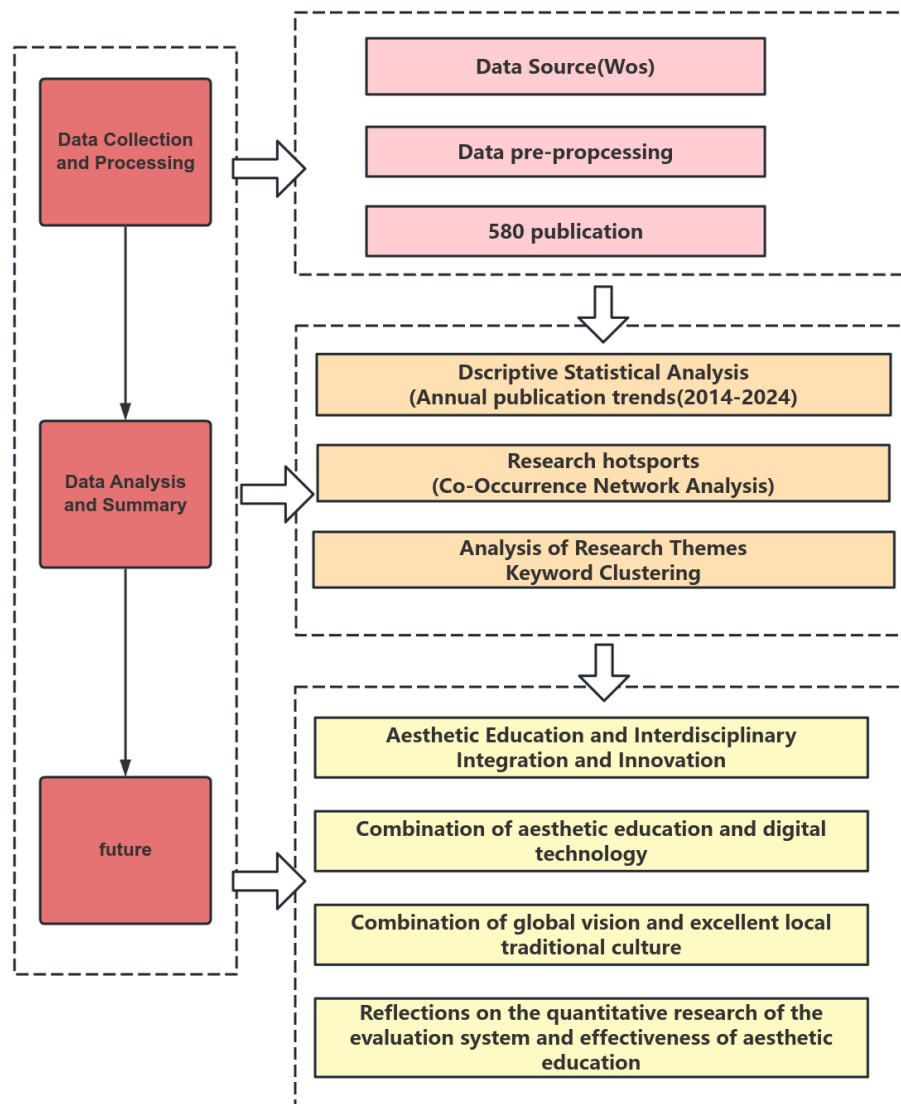


Figure 1. research framework

The research framework of the text is shown in Figure 1. First, in the first part, the background of the study and its value are introduced to clarify the importance and necessity of this study. Next, the second part describes the research methodology in detail, including the data sources, the selection of keywords, and the application of bibliometric analysis techniques. The third part systematically compiles the findings of the study, which include (1) descriptive statistical analysis to map the annual publication trend and highlight the academic significance of the field; (2) keyword co-occurrence network analysis and clustering methods to identify the research hotspots and the trajectory of theme evolution related to aesthetic and quality education; and (3) the use of timeline view,

keyword mutation analysis, and saliency statistics to analyze the research themes' temporal development and evolution. The fourth part explores the future prospects of the integration of aesthetic education and humanistic literacy and outlines future research directions and trends. Finally, Part V summarizes the main contributions and limitations of this study for future research.

2.METHODS

This study delves into the relationship between aesthetic education and humanistic literacy from a bibliometric perspective and systematically constructs an extensive knowledge map using VOSviewer (version 1.6.17, July 22, 2021, Center for Science and Technology Studies). Bibliometrics is a software tool released in 2010 by Nees Jan van Eck and Ludo Waltman that aims to create and explore maps based on web data, primarily for the analysis of academic records, but which can be applied to any type of web data (e.g., social networks). VOSviewer offers three different visualizations: network view, overlay view, and density view, which are suitable for exploring relationships such as co-authorship, co-occurrence, citations, bibliographic coupling, and co-citation links. VOSviewer is a Java application-based bibliometric analysis tool widely used in bibliometric and citation studies to construct and visualize bibliometric networks by generating maps by analyzing network information such as researchers, citations, and number of couplings in the literature (Van Eck & Waltman, 2010; Moral-Muñoz et al. 2020). Studies have shown that VOSviewer has unique advantages over similar analytical tools CiteSpace, HistCite, and CitNetExplorer in terms of visualization capabilities, data handling, and importing and exporting data from different sources (Moral-Muñoz et al., 2020).

2.1 Data sources

This study will use VOSviewer (version 1.6.17) to visualize and analyze data from literature related to aesthetic education and art education. Data were collected from the three main categories of “SCI, SSCI and AHCI” databases in the Web of Science, a recognized repository in the field of bibliometric research (Zyoud et al. 2017), by searching for the keywords in the form of: “aesthetic education, art education”, the categories selected were: “education”, “education research” and “art”, and the publication years were 2014-2024 (see Figure 1). A systematic literature search was conducted in WOS for literature that met the above requirements. The literature search was carried out on March 15, 2025, and the selection parameters were strictly limited to education, educational research, and "art." The selection parameters were strictly limited to "aesthetic education," "art," and "cultural literacy." The data extracted from WOS covered all relevant entries and their associated citations and underwent a rigorous pre-processing step to ensure that there were no duplicates. In the end, 580 representative documents were selected for in-depth analysis.

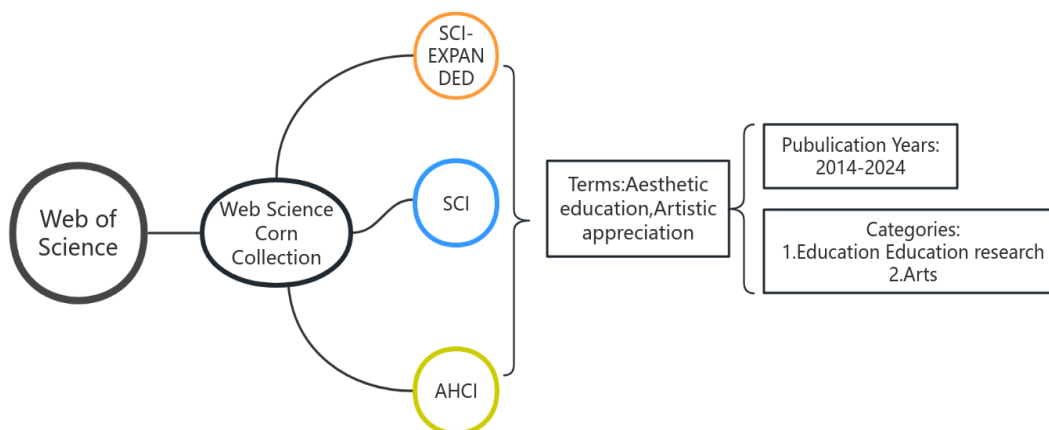


Figure 2: Sources of data for this study

3. FINDINGS

3.1. descriptive statistical analysis

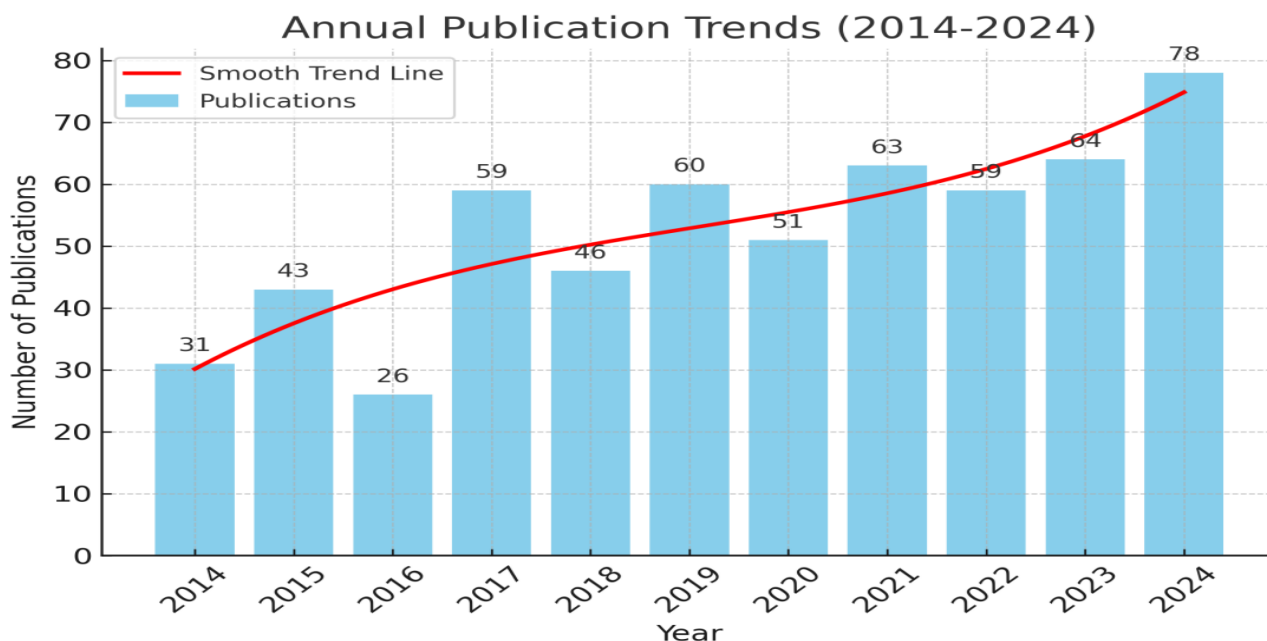


Figure 3. Annual publication trends map (2014-2024).

As shown in Figure 3, the number of publications on aesthetic education remained at a moderate level between 2014 and 2016. This trend likely reflects the early-stage development of research in this field, where scholars were primarily engaged in theoretical exploration and research design for aesthetic education objectives. From 2017 onward, there was a significant increase in the number of publications, which may be attributed to a growing recognition of the role of aesthetic education in enhancing cultural literacy, along with policy support and increased research funding. Although the number of publications fluctuated between 2017 and 2021, the overall trend remained upward, indicating a deepening and diversification of research in this field. Entering the period from 2022 to 2024, the number of publications has continued to grow steadily, demonstrating the sustained expansion of research efforts. This growing trend reflects, on the one hand, the global emphasis on the value of aesthetic education and, on the other hand, the strong determination of scholars and policy makers to promote the development of aesthetic education. This trend is consistent with the findings of Wang et al. (2022), which showed that fluctuations in the number of publications are useful for assessing annual progress in the field of research, as a reference for analyzing the current state of research in the field, and for predicting future research trends. According to the annual publication trend chart of publications on aesthetic education from 2014 to 2024, the research results related to aesthetic education have shown a steady growth, and in combination with the current deepening reform of global education, it is reasonable to believe that in the coming period of time, the research related to aesthetic education is also expected to maintain a continuing upward trend and show a richer and more diversified development trend.

3.2 Research Hotspots—Keyword Co-occurrence Network Analysis

A keyword co-occurrence network diagram is an effective tool for literature analysis in a research field, which helps to analyze research themes and reflect the research focus and disciplinary vitality of the field through the frequency of keyword appearances. In knowledge graph analysis, research themes and hotspots are usually revealed through keyword analysis. In this study, in the keyword co-occurrence network created using VOSviewer, each node represents a keyword, and the size of the node is related to the frequency of the keyword. The keyword co-occurrence graph generated by the "keyword" function of VOSviewer has a link count of 597 and a total link

strength of 809.

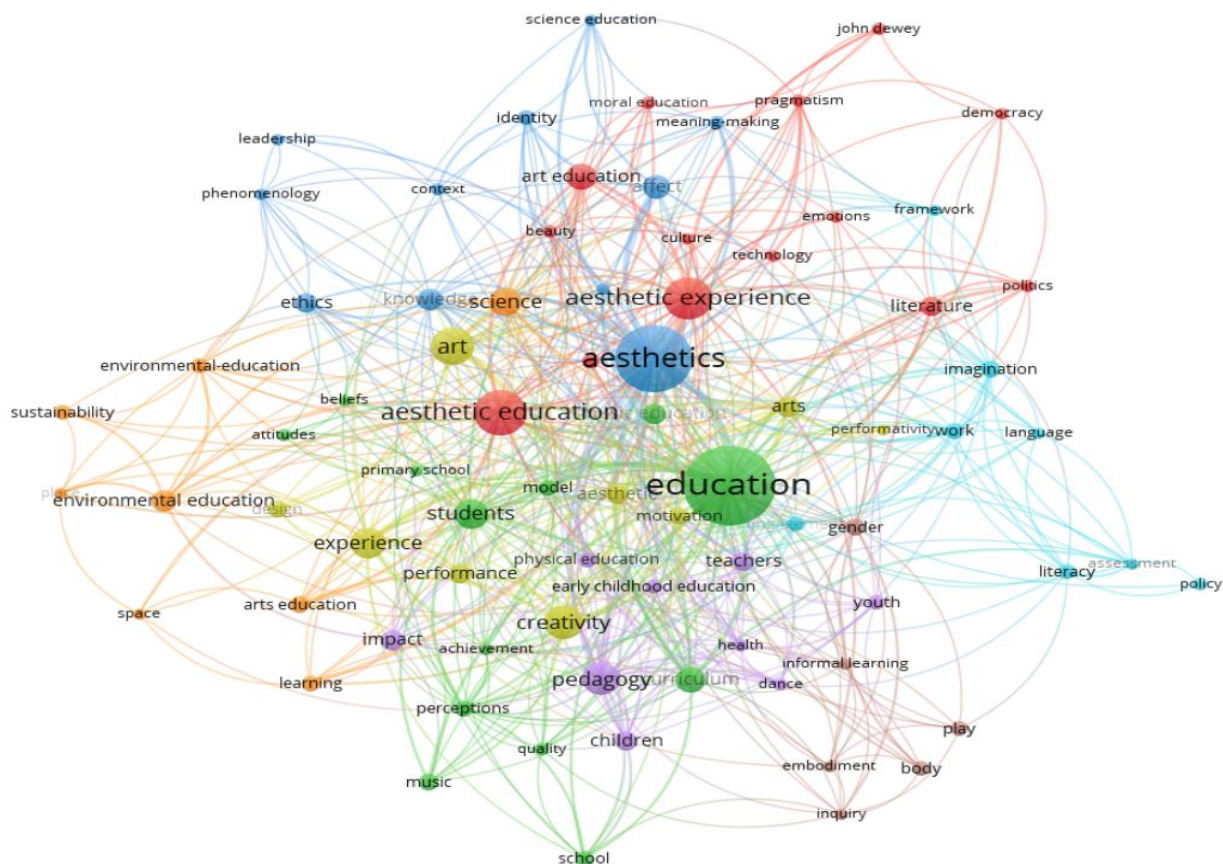


Figure 4: Keyword co-occurrence network diagram

The high frequency of keywords not only reflects the research intensity of the field but also reveals the concentration trend of specific research areas. As shown in Figure 4, "education," "aesthetics," and "aesthetic experience" are frequently occurring keywords, indicating that these terms occupy an important position in the field. The core nodes that are prominent in the graph are located in the green, red, and blue clusters, respectively, and the nodes are large, indicating their centrality to the field of study. These core nodes have a high number of connecting lines, indicating that they act as bridges between multiple topics. This figure shows a research field centered on "aesthetics" and "education," and the diversity and intersectionality of the field can be clearly seen through the clustering and keyword network.

Table 1. Top 20 high-frequency keywords.

Number	Keyword	Occurrences	Total link strength
1	education	72	132
2	aesthetics	55	108
3	aesthetic experience	31	56
4	students	18	48
5	art	26	47
6	creativity	24	46
7	pedegogy	22	46
8	aesthetic education	33	45
9	experience	19	40
10	arts	11	36
11	science	17	36
12	curriculum	16	35
13	teachers	11	30
14	knowledge	12	29
15	perceptions	8	29
16	aesthetic	11	28
17	gender	10	25
18	motivation	10	25
19	children	10	23
20	imagination	9	23

The top 20 high-frequency keywords derived from VOSviewer reveal the core themes, hot issues and research trends in the research field. The frequency and link strength of these keywords reflect the conceptual relevance and depth of research interest. The top 20 high-frequency keywords show that the most frequent keyword is “education”, followed by “aesthetic education”. “Education” with a word frequency of 72 and a link strength of 132 is the most frequent keyword, which indicates that research in this area focuses on the importance of educational concepts and teaching strategies in aesthetic education. The link strength indicates that “education” is closely related to other topics such as aesthetics, creativity, pedagogy and curriculum. In order to improve the quality of education and teaching, this study will also further explore innovative pathways to integrate aesthetic education with educational theories, teaching strategies and practices. "Aesthetics", with 55 occurrences and a link strength of 108, is the central keyword in the field, and is closely related to 'education' and other related concepts (e.g., 'aesthetic experience'and 'aesthetic education'). 'aesthetic education'). The focus is on how to create learning environments that are conducive to the teaching of aesthetic education, and how to promote students' engagement and creativity in the process of aesthetic education through learning environments. The secondary focus keywords were "aesthetic experience" and "aesthetic education." With 31 occurrences of "aesthetic experience" and a link strength of 56, the data analysis suggests that the role of sensory and emotional experiences in educational settings can be explored in depth. It is therefore possible to address how aesthetic experiences promote active participation in learning and the development of creative thinking. "Aesthetic Education" appears 33 times with a link strength of 45, and data analysis suggests that scholars are emphasizing research on aesthetics-centered educational methods or frameworks, which may include curriculum design, teaching strategies, and the benefits of integrating aesthetics into traditional education. In summary, "education" and "aesthetics" are most closely interconnected, indicating their centrality in the research network. Keywords such as 'aesthetic experience,' 'aesthetic education,' and 'pedagogy' also have a high link strength, suggesting that they play an important role in shaping relationships between broader concepts. These high-frequency keywords reveal that aesthetics plays an important role in forming relationships between broader concepts. These high-frequency keywords reveal a multidimensional research structure for the integration of aesthetic education and cultural literacy, providing a comprehensive framework for future research directions.

3.3. Thematic analysis by the keyword clustering methods

Table 2: Keyword clustering table

Cluster1(14 items)	cluster2(13 items)	cluster3(11 items)	cluster4(9 items)	cluster5(9 items)	cluster6(8 items)	cluster7(8 items)	cluster8(6 items)
aesthetic education	achievement	aesthetics	aesthetic	children	assessment	arts education	body
aesthetic experience	attitudes	affect	ant	dance	engagement	environmental education	embodiment
art education	beliefs	challenges	arts	early childhood education	framework	environmental-education	gender
beauty	curriculum	context	creativity	health	imagination	learning	informal learning
culture	education	ethics	design	Impact	language	place	inquiry
democracy	model	identity	experience	pedagogy	literacy	science	play
emotions	music	knowledge	motivation	physical education	policy	space	
john dewey	music education	leadership	performance	teachers	work	sustainability	
literature	perceptions	meaning-making	performativity	youth			
moral education	primary school	phenomenology					
politics	quality	science education					
pragmatism	school						
teacher education	students						
technology							

Table 2 shows the visual analysis of keyword clusters using VOSviewer based on co-occurrence patterns in the literature or dataset and grouped according to the relevance of the keywords. In this study, the clusters of related

concepts or keywords generated by the co-occurrence analysis tool form a total of eight cluster groups. Items within the clusters often appear together in the research articles, suggesting that they are closely related in terms of their semantics or themes. The analysis of the clusters helps us to understand the relationship between different educational themes, each representing different dimensions of aesthetic education, and will be followed by an in-depth discussion of these themes and an analysis of the dynamic development of these areas.

Theme 1: Emphasizing Aesthetics in the Educational System

This theme corresponds to Cluster 1, which contains 14 semantically or contextually relevant items, including terms such as aesthetic education, aesthetic experience, arts education, cultural, emotional, and moral education, and is centered around arts and aesthetic education. The theme emphasizes the optimization of aesthetic education resources in schools as a way to help develop students' aesthetic sensibility and creativity, enrich their lives, and increase engagement in learning (D'Olimpio, 2022). In addition, the theme explores the influence of John Dewey and pragmatist thought, particularly experiential learning and educational democracy (Dewey, 1997; Zhang, 2024). Dewey emphasized that aesthetic experiences are the best way for students to gain deep learning and insights that integrate the emotional and intellectual.

With the keywords "democracy", "politics" and "rule of law" included in the Cluster, researchers have emphasized the close connection between aesthetic education and values and ideology, for example. Scholar Paris emphasized the role of aesthetic education in developing students' virtues in his study (Paris, 2019), in addition to some scholars further explored the interrelationship between art education, literature and emotions. The findings suggest that the key factors influencing students' achievement in aesthetic education are students' opportunities for emotional expression and motivation in arts education (Casian et al., 2018).

In summary, this thematic cluster provides a theoretical reference for research on the interactions between art, aesthetic education and social values, as well as key themes and gaps in current research.

Theme 2: The impact of aesthetic and music education on students' learning outcomes and cognitive development

This theme contains 13 key terms: learning outcomes, attitudes, beliefs, curriculum, education, music education, elementary school and quality. In this theme, the researcher focuses on the impact of aesthetic and music education on students' learning outcomes and cognition, and explores the factors that influence learning outcomes and perceptions of teaching and learning. The theme emphasized that the concern in teaching and learning should not only be the completion of classroom tasks per se, but also the impact of music education on students' creativity, engagement in learning, and academic achievement, and emphasized that a fair and equitable, diverse assessment system should be used. Findings emphasize the importance of focusing on developing students' aesthetic skills and creativity when designing arts education curricula (Guan et al., 2024). In addition, the theme emphasized the importance of student participation in the teaching and learning process, further analyzing the impact of students' attitudes and perceptions of learning on the quality of education. The findings suggest that motivating students and changing their attitudes toward learning can help improve educational quality and innovation, while recommending that educators adopt a comprehensive and multifaceted approach to assessment. In conclusion, the theme reflects the importance that the education sector attaches to basic education and music education, aiming to improve the quality of education through pedagogical assessment and improvement of educational practices, which in turn promotes the all-round development of students.

Theme 3: Disciplinary Integration (Integrating Aesthetics and Disciplinary Teaching) to Improve Engagement and Understanding

The theme, which includes 11 core terms, mainly emphasizes interdisciplinary research in the field of education, covering related fields such as ethics, aesthetics, and meaning construction, and stresses the importance of placing more emphasis on inculcating students with the humanistic spirit during the process of teaching and learning, so

that they can learn through experience, and experience through learning. and at the same time develop their emotional and social skills. The theme also emphasized the implementation of student-centered education for students in the educational process (Ying, 2020). In addition, the theme further explored the disciplinary cross-fertilization of knowledge, identity, emotions, ethics, and leadership with science education (Garrison et al., 2015). Mao et al. (2023) noted that although there is not much current research on the integration of aesthetics and science education, this disciplinary integration helps to stimulate and develop students' imagination and creativity, thus advocating the integration of aesthetics into science education as a way to achieve the desired effect of increasing student engagement and understanding (Chen, 2020). In conclusion, the research on this topic opens up new research paths for the integration of aesthetics education and science education, and also facilitates the improvement of students' classroom engagement and understanding of knowledge.

Theme 4: The Unique Value of Creativity Development in Aesthetic Education and Teaching

This theme contains a total of nine key terms such as aesthetics, art, creativity, design and experience. Focusing on aesthetic education, creativity and expressive development, this theme emphasizes the interaction between artistic design and aesthetic experience in aesthetic education for pupils. Collard and Looney (2014) in their study stated that the core skill in Scottish education is the mastery of creativity; and in China, creativity is considered to be the key to national security and social development (Jiansheng, 2006); Furthermore, in the European Union, creativity is similarly recognized as necessary for skill development. Guan et al. (2024) suggest that the key to the development of creativity in students is for them to experience beauty and grow in their learning.

The theme also emphasized also the role of performance and performativity in education. Teachers can enhance students' creativity by creating conducive environments and employing in-depth learning strategies during the teaching-learning process (Mawang et al., 2020). In conclusion, the theme deals with all aspects of developing students' creativity in teaching and learning in aesthetic education.

Theme 5: Impact of aesthetic education on child development

This theme corresponds to Cluster5, which contains a total of 8 key terms. This theme focuses on early childhood development and children's education, which covers the core areas of early childhood education, and explores how to promote the overall development of children and adolescent students in terms of their physical health, cognitive, emotional, and social skills through the use of music, dance, and body rhythms, and physical activities in the teaching and learning of school education. Puehringer (2019) in his study clearly stated that aesthetic education contributes to personal development and social progress. Campus serves as an important place for cultural heritage and students' intellectual development, and with diverse learning platforms, students can overcome language barriers with the help of art classrooms to communicate and express themselves through music and dance. In addition, the theme explores the role of dance and physical education on children and adolescents' self-awareness, social skills, and physical and mental health at different stages of education. Üngüren and Tekin (2023) found in their study that physical activity helps to mitigate the negative effects of social media addiction among adolescents and helps them to develop a proper sense of self. In addition, the theme also emphasizes the key role of teachers' teaching strategies in aesthetic education, suggesting that educators should innovate teaching methods and strategies in teaching as a way to stimulate students' learning motivation and participation, and then achieve the goal of improving students' cultural understanding and creativity (Liu et al., 2024).

To summarize, the keywords in the fifth group mainly reveal the multiple roles played by aesthetic and physical activities in the development process of students, and the theme also specifically emphasizes the importance of health education, innovative teaching methods, and teachers' roles in early childhood education and children's adolescence education.

Theme 6: Aesthetic Education and Social Culture, Policy

This theme contains eight core terms and focuses on the reform of teaching and learning assessment and the

development of policies and systems. The theme emphasizes that effective teaching assessment significantly improves students' learning engagement and motivation. Some studies have pointed out that in art education, effective teaching evaluation not only helps to understand students' aesthetic development, but also has significant effects in stimulating students' creativity, emotional expression, and awareness of lifelong learning (Zhang et al., 2024). This topic also discusses the impact of the teaching strategy of combining language learning and creative thinking in teaching aesthetic education on improving students' comprehensive abilities. In addition, this theme discusses the key role played by educational and pedagogical policies in promoting educational equity, literacy and social participation. Literacy education is particularly important in developing countries or poor regions, especially for low-income or marginalized groups, which facilitates the enhancement of the vocational competence of the people in the region, provides them with employment opportunities and improves their socio-economic status, and education is thus seen as central to socio-economic development (Edwards-Fapohunda, 2024). In summary, the keywords of Theme 6 focus on the key areas of pedagogical and evaluative reforms and policy and institutional development and literacy education, emphasizing the multidimensional impact of education on social participation, vocational development and individual empowerment, and providing new perspectives for current.

Theme 7: Aesthetic Education and Ecological Awareness

This theme, which corresponds to Cluster 7 and contains eight key terms, focuses on the interdisciplinary fields of art education, environmental education and sustainability, emphasizing the need for educators to consciously cultivate students' awareness of environmental protection, the concept of sustainable development and the ability of artistic creativity in the process of teaching and learning. The theme also explores how to enhance students' environmental awareness and understanding of sustainability concepts through subtle influence in art education, and emphasizes the need to pay attention to aesthetic education, focusing on the development of students' aesthetic ability, sense of collective identity, and humanistic care (Østergaard, 2017). This topic focuses on the overall learning experience of students and re-emphasizes the need to integrate scientific thinking into aesthetic education (Jakobson & Wickman, 2008). In addition, it is also re-emphasized that educators should also organically integrate environmental education into the teaching of the science curriculum to guide students to analyze environmental issues rationally, as well as to guide students' perceptiveness and concern for environmental issues through the development of hands-on skills in artistic activities (Boeckel, 2013). This theme also discusses how the design of educational environments can have a direct effect on students' learning effectiveness and motivation. For example, moving the classroom to an outdoor classroom or an eco-park allows students to experience nature more intuitively, so that art spaces equipped with creativity can more efficiently stimulate students' artistic inspiration and passion for creation. (Ma Wang et al., 2020).

Theme 8: Creating learning environments for embodied arts education: Emphasizing exploration, experience and creativity.

Theme 8 focuses on the integration of arts education with embodied learning and emphasizes the importance of student learning strategies, such as multi-sensory experiences, informal learning, play-based learning and inquiry-based learning, as diverse learning strategies in arts education. Immersion and depth of learning are enhanced through multi-sensory interactions, while focusing on the embodiment of physical and social roles in education (Mao, 2023). (Song et al., 2024) showed in their study that informal learning environments promote learners' knowledge acquisition mainly through games and exploratory activities, and that AI has a significant role in enhancing students' aesthetic experience. In addition, games and role-playing help students understand body, gender, and social rules, and inquiry-based teaching deepens students' understanding of aesthetic concepts mainly through problem-oriented and experimental processes. Gamification is mainly devoted to stimulating students' creativity through teaching interactivity and fun. Overall, Theme 8 emphasizes the deep integration of arts education and embodied learning and explores the critical role of informal, inquiry-based, and gamified learning

in promoting students' creativity and deep understanding.

4. Future research direction of aesthetic education.

With the advancement of science and technology and the arrival of the digital age, aesthetic education is also facing development opportunities and challenges, and the future education model will go beyond the traditional knowledge and skills transfer and pay more attention to the overall development of students, including innovation, emotion, interaction, and interdisciplinary ability.

4.1 Aesthetic Education and Interdisciplinary Integration and Innovation

With the popularization and development of new media, people's aesthetic concepts and experiences have undergone significant changes. Currently, aesthetic education in colleges and universities is characterized by pluralistic innovation, interdisciplinary integration, and open sharing (Lili, Hang, 2023), and aesthetic education is no longer limited to traditional art forms (Turan, Cetinkaya, 2022). In the future, aesthetic education may be integrated with other disciplines, such as the integration of aesthetic education with science, humanities, and civics courses, etc. This integration can provide students with a more diversified platform for artistic experience, which not only stimulates students' creative thinking but also enhances their comprehensive ability through art and aesthetics and develops critical thinking, problem-solving ability, and interdisciplinary communication skills (Yang, 2022). In the new media era, it is crucial to promote interdisciplinary integration. Aesthetic education should not be limited to the field of art but should be integrated with other disciplines (Lili, Hang, 2023).

4.2 Combination of Aesthetic Education and Digital Technology

With the rapid development of digital technology, an important direction for future research in aesthetic education is to explore how to combine technology with art education and to promote the application of digital art, virtual reality (VR), augmented reality (AR), and other emerging technologies in aesthetic education (Panciroli et al., 2023). This can not only enrich the teaching methods of aesthetic education, promote the personalized implementation of aesthetic education (Lili, Hang, 2023), and provide students with richer artistic experiences and creative spaces, but also realize personalized teaching. Expanding the forms and expressions of art education can also provide students with more innovative learning tools and personalized instruction (Uboldi, 2024).

4.3 Combination of global vision and excellent local traditional culture

With the acceleration of globalization, future aesthetic education needs to strengthen the inheritance of excellent traditional culture and the cultivation of global vision. The influence of globalization has led to increasingly frequent exchanges between different cultures, and students can come into contact with and learn about the arts and cultures of different countries and regions through aesthetic education (Wang et al., 2024). This cultivation of global vision helps to enhance students' cultural understanding, tolerance, and creativity. At the same time, the inheritance and innovation of local culture is still an important task of aesthetic education (Liu, 2021) to help students deeply understand and express the uniqueness of local culture and to integrate the excellent traditional Chinese culture and local non-heritage culture into the teaching sessions and campus environment layout. For example, the aesthetic education curriculum is integrated with the arts and humanities, the aesthetic education resources are explored, and the school aesthetic education is carried out according to the local conditions (making full use of the advantageous resources of the school, developing the aesthetic education curriculum with the characteristics of the regional culture and the professional characteristics of the school), so that the students can feel the charm of the traditional culture in their learning.

4.4 Reflections on the evaluation system and quantitative research on the effectiveness of aesthetic education

With the gradual improvement of the educational assessment system, future research on aesthetic education should pay more attention to the scientific assessment of the effectiveness of art education. In the assessment process, teachers often rely on standardized teaching methods and assessment standards, ignoring students' individuality. As a result, some students lose interest and motivation in aesthetic education because their potential

is not fully utilized (Lili, Hang, 2023). As a result, effective assessment criteria should be formulated to optimize the assessment mechanism and strengthen the evaluation system and implementation mechanism of aesthetic education. The evaluation of aesthetic education should not only focus on the final exam or grades but should reflect the process of learning, imitation, and creation. Ensure students' overall development and artistic literacy (Lili, Hang, 2023).

5. CONCLUSIONS

Using the VOSviewer bibliometric analysis tool, this study conducted a comprehensive analysis of 580 scholarly articles in the Web of Science database from 2014 to 2024, providing insights into the evolving research trends and foci in the field of aesthetic and cultural literacy. Descriptive statistical analyses show that the number of research articles in this field has increased year after year, highlighting the enduring and profound interest in these topics in the global academic community. This study reveals the research hotspots, thematic clustering, and their trends in the field of education and aesthetics through keyword co-occurrence network and clustering analysis. The results indicate that research in this field is centered on aesthetic education, creativity, pedagogy, curriculum, and multidisciplinary integration. This study finally concludes that aesthetic education is an important part of quality education and plays a crucial role in cultivating the comprehensive quality of students, and that future research on aesthetic education and cultural literacy will be increasingly integrated into modern digital technology, and that although the wide application of new media technology provides rich opportunities for aesthetic education, many universities have not yet fully explored diverse teaching methods, and the traditional classroom teaching mode still dominates, which may lead to the rigidity and homogenization of aesthetic education teaching. Therefore, teaching strategies and interdisciplinary integration are crucial to keeping pace with the times. Aesthetic education should not be limited to the field of art but should be integrated with other disciplines to stimulate students' active participation in aesthetic knowledge, thus enhancing the comprehensive effectiveness of aesthetic education. The future research direction of aesthetic education will combine digital technology, interdisciplinary integration, cultural heritage, and global vision, and emphasize the evaluation system and quantification of effectiveness to deepen the multi-dimensional approach and explore new educational concepts and methods, aiming to cultivate well-rounded talents with a spirit of creativity, cross-cultural understanding, and a sense of social responsibility. We need to focus on how to promote the comprehensive development of aesthetic education through innovative educational concepts, teaching strategies, and assessment systems to provide students with a rich experience in arts education and to cultivate citizens with a creative spirit and a sense of social responsibility for society. In terms of practice, it is recommended to adopt an approach based on the functional value of aesthetic education, combined with the context of the times, and give full play to the potential of new media tools to promote personalized aesthetic education, which can both stimulate students' active participation in aesthetic knowledge and enhance the comprehensive efficacy of aesthetic education (Lili, Hang, 2023).

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