



Research on the Practical Path of Integrating Aesthetic Education into Subject Teaching

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ABSTRACT

Integrating aesthetic education into subject teaching is an important way to improve the quality of education and cultivate students' core competencies. This study carries out a systematic discussion from three dimensions: value foundation, practical path, and safeguard measures for the integration of aesthetic education into subject teaching. The study found that the integration of aesthetic education has a solid theoretical basis and significant practical value. It can not only improve the teaching effect of the subject but also promote the development of students' core competencies and promote the innovation of teaching models. At the practical level, the integration of aesthetic education requires systematic design from aspects such as curriculum design, teaching implementation, and evaluation feedback. Through strategies such as the identification and extraction of aesthetic education elements, design of aesthetic dimensions of teaching objectives, and implementation of aesthetic education in teaching activities, aesthetic education, and disciplines can be realized—organic integration of teaching. The study points out that to effectively promote the integration of aesthetic education, we need to strengthen teachers' professional development support, improve resource construction, improve system guarantees and other measures, and form a working mechanism for teachers, schools, and education departments to coordinate promotion. This research has important theoretical value and practical significance for deepening the reform of basic education and improving the quality of education and teaching.

Keywords: Integration of aesthetic education; subject teaching; core literacy; practical path; teaching reform

1. Introduction

1.1 Research background and significance

The report of the 20th National Congress of the Communist Party of China clearly stated the need to "promote cultural self-confidence and self-improvement" and emphasized "building a socialist ideology with strong cohesion and leadership." In this context, the "Opinions on Comprehensively Strengthening and Improving School Aesthetic Education in the New Era" puts forward the concept of "educating people with aesthetics, educating people with culture, and cultivating talents with beauty", which provides policy guidance for the integration of aesthetic education into subject teaching. Jin Xing and Li Rumi (2024) [1] pointed out that teachers' aesthetic literacy has a direct impact on improving teaching effects, which requires more attention to the integration of aesthetic dimensions in subject teaching [1]. At present, the reform of subject teaching attaches increasing importance to improving the quality of education through multiple methods. The organic integration of aesthetic education into subject teaching has become an important direction of exploration in the reform of basic education.

At the practical level, research by Wang Yongliang (2023) [2] shows that through the penetration of aesthetic education, students' basic abilities, such as observation, imagination, and creativity, have been significantly improved. The improvement of these abilities not only contributes to the mastery of subject knowledge but also promotes the overall development of students' core competencies. However, Xu Xiaojin (2023) [3] found through investigation that there is a common phenomenon in the current teaching of various disciplines that emphasizes knowledge teaching and neglects aesthetic experience. The organic integration of aesthetic education elements and subject teaching has not yet been achieved. How to effectively integrate aesthetic education into daily teaching practice has become a practical problem that needs to be solved urgently. Li

Chenlin's (2023) [4] research pointed out that when students feel the beauty of mathematical rhythms in music, experience the beauty of geometric figures in art, and appreciate the beauty of physical phenomena in scientific experiments, the core competencies of different disciplines are naturally integrated. This integration can not only improve teaching effects but also cultivate students' comprehensive qualities. Yu Wenqiong and Shen Paiying (2024) [5] further emphasized that effective integration of aesthetic education should be based on the training goals of the core competencies of the subject and organically combine the discovery and experience of beauty with the learning of subject knowledge.

1.2 Analysis of Research Status

In recent years, the academic community has conducted multi-dimensional explorations on the integration of aesthetic education into subject teaching. In terms of theoretical research, Han Jiaxuan et al. (2023) [6] systematically explored the connotation of subject-core literacy and pointed out that aesthetic education has unique advantages in cultivating students' key abilities and essential qualities. Lin Shuting (2024) [7] explored the specific strategies of aesthetic education penetration from the perspective of music teaching, emphasizing that students' perception, appreciation, and creativity should be cultivated.

In terms of practical exploration, Wang Hongwei (2024) [8] found through mathematics teaching practice that teachers can guide students to discover the beauty of mathematical laws, the beauty of logical reasoning, and the beauty of problem-solving methods. Zheng Min (2023) [9] explored effective ways to integrate aesthetic education into chemistry teaching and proposed to let students feel the magic and beauty of chemical reactions through experimental demonstrations, multimedia displays, and other methods. These studies provide useful references for the integration of aesthetic education into subject teaching.

1.3 Definition of core concepts

The integration of aesthetic education refers to the conscious exploration and application of aesthetic education elements in the subject teaching process and the penetration of aesthetic education into teaching activities through various methods. Fan Xiaohu (2023) [10] pointed out that this integration includes not only exploring the aesthetic factors contained in subject knowledge but also using aesthetic education methods to improve teaching effects.

The aesthetic education elements in subject teaching mainly include the beauty of knowledge (such as the beauty of logic in mathematics, the beauty of laws in science), the beauty of methods (such as the beauty of problem-solving ideas, the exquisiteness of experimental design), and the beauty of emotion (such as the artistic conception of literary works) beauty, the appeal of artistic expression), etc. Wang Xiuhua (2024) [11] research shows that the effective use of these elements can significantly improve students' aesthetic literacy and learning interest.

1.4 Research content and ideas

This study focuses on the practical path of integrating aesthetic education into subject teaching and focuses on the following contents: first, the value basis of integrating aesthetic education into subject teaching, analyzing its necessity and feasibility; second, the specific practical path of integrating aesthetic education, including curriculum design, teaching implementation, and evaluation feedback; third, safeguard measures and implementation suggestions to provide support for promoting the integration of aesthetic education.

Through systematic exploration of the practical path of integrating aesthetic education into subject teaching, it aims to provide front-line teachers with practical guidance and suggestions, promote the organic integration of aesthetic education and subject teaching, and improve the quality of education and teaching. At the same time, the results of this study will also provide a reference for deepening the reform of aesthetic education and innovating teaching methods.

2. The value basis of integrating aesthetic education into subject teaching

2.1 Theoretical basis for integrating aesthetic education

Aesthetic education and subject teaching have a natural unity. From the perspective of cognitive laws, the perception and experience of beauty are important components of the learning process. Ren Siyu (2023) [12] found through research on the application of traditional culture in aesthetic education that integrating excellent traditional cultural elements into subject teaching can effectively enhance the cultural connotation and aesthetic value of teaching. This integration not only helps students understand and master knowledge but also cultivates their cultural confidence and national identity. For example, integrating the rhythmic beauty of traditional poetry into Chinese teaching and showing the beauty of thinking of ancient mathematicians in mathematics teaching can make subject knowledge more attractive and vital.

From the perspective of the essence of education, integrating aesthetic education into subject teaching meets the requirements of quality education. Education should not only impart knowledge but also cultivate students' ability to discover, appreciate, and create beauty. Integrating aesthetic education elements into subject teaching can not only achieve the goal of knowledge teaching but also enhance students' aesthetic literacy. It is an important way to realize the function of education in cultivating people. Zheng Min (2023) found in the practice of chemistry teaching that using experimental demonstrations, multimedia displays, and other methods to let

students feel the magic and beauty of chemical reactions can not only improve students' learning interest but also cultivate their scientific and aesthetic ability. This integration allows students to cultivate aesthetic taste, develop innovative thinking, and form correct values while mastering basic knowledge and basic skills.

In terms of cognitive development laws, the integration of aesthetic education fits the characteristics of students' physical and mental development. Effective integration of aesthetic education should be based on the cultivation goals of the core literacy of the subject and organically combine the discovery and experience of beauty with the learning of subject knowledge. The primary and secondary school stage is a critical period for the development of students' aesthetic ability and an important period for the formation of correct aesthetic concepts. At this stage, the infiltration of aesthetic education through subject teaching can meet students' aesthetic needs and promote their harmonious physical and mental development. At the same time, the emotionality and pleasure unique to aesthetic activities can reduce learning pressure and create a relaxed and pleasant learning atmosphere. From the perspective of teaching practice, the integration of aesthetic education into subject teaching has significant feasibility. Each subject contains unique aesthetic resources: the beauty of language literature and art in the Chinese language subject, the beauty of logical reasoning and problem-solving methods in the mathematics subject, the beauty of natural laws, and scientific inquiry in the science subject. Wang Hongwei (2024) found in mathematics teaching practice that teachers can guide students to discover the beauty of mathematical laws, logical reasoning, and problem-solving methods. The exploration and application of such aesthetic elements can effectively improve teaching effectiveness and stimulate students' interest in learning.

Further, the integration of aesthetic education can also promote the mutual penetration and integration between subjects. The aesthetic literacy of teachers directly affects the cultivation of students' aesthetic perception and judgment ability. In actual teaching, teachers can introduce the rhythmic beauty of mathematics in music teaching, integrate the beauty of geometric forms in art teaching, and show the beautiful conception of experimental design in science teaching. This interdisciplinary integration not only expands students' knowledge horizons but also cultivates their comprehensive thinking ability. From the perspective of educational value, the integration of aesthetic education into subject teaching can achieve the unity of knowledge education and personality cultivation. By infiltrating aesthetic education in subject teaching, students can be cultivated with correct values and healthy aesthetics, and their sound development of personality can be promoted. This integration not only focuses on the intellectual development of students but also pays more attention to the cultivation of their emotions, attitudes, and values, which helps to achieve the goal of holistic education.

2.2 Practical value of aesthetic education integration

The integration of aesthetic education into subject teaching not only has a theoretical basis but also has significant practical value. In the actual teaching process, the integration of aesthetic education has promoted the improvement of the subject-teaching effect, the development of students' core literacy, and the innovation of teaching modes.

2.2.1 Improve the teaching effect of the subject

The integration of aesthetic education can effectively stimulate students' learning interests and improve the teaching effect. By exploring and displaying the aesthetic elements in subject knowledge, abstract knowledge becomes vivid, and the boring learning process becomes interesting. For example, in chemical experiments, by observing the color changes and crystal formation in the reaction process, students can feel the magic and beauty of chemical changes and stimulate the desire to explore. In biology classes, by appreciating the diversity of life and the beauty of the balance of ecosystems, students can more easily understand the principles of ecology.

At the level of knowledge understanding, the integration of aesthetic education creates a more effective cognitive path. When different subject knowledge is presented in a beautiful form, students' understanding and mastery are more in-depth. In physics teaching, by observing the beautiful trajectory of the pendulum motion, students can not only feel the beauty of motion but also have a deeper understanding of the laws of periodic motion. The integration of aesthetic education also optimizes students' cognitive processes. Through aesthetic experience, students can better use figurative thinking and promote the understanding of abstract concepts. In mathematics teaching, by discovering the beauty of simplicity in mathematical formulas and the beauty of symmetry in geometric figures, abstract mathematical concepts become easier to understand and remember. In Chinese learning, by feeling the beauty of the artistic conception of literary works, students can use language and characters more flexibly.

2.2.2 Promote the development of core literacy

The integration of aesthetic education effectively cultivates students' innovative thinking ability. Infiltrating aesthetic experience in subject learning can cultivate students' divergent thinking and stimulate creative potential. In physics teaching, by appreciating the beauty of the design of scientific experiments, students can not only understand the principles of physics but also cultivate innovative consciousness and experimental inquiry ability. In engineering technology courses, by feeling the exquisite beauty of mechanical structures, students' design thinking is developed.

In terms of the development of thinking quality, the integration of aesthetic education cultivates students' comprehensive thinking ability. In the process of exploring and discovering beauty, students' thinking qualities, such as observation, analysis, and judgment, are comprehensively improved. By feeling the rigorous beauty of the reasoning process in mathematics teaching, students' logical thinking ability is strengthened. Experiencing the magical beauty of the reaction process in chemical experiments cultivates students' empirical thinking. The integration of aesthetic education also deepens students' humanistic qualities. In Chinese teaching, by appreciating the artistic beauty of literary works, students not only improve their language expression ability but also cultivate deep humanistic feelings. In history learning, by feeling the profound beauty of historical culture, students' cultural confidence and national identity are enhanced. In terms of practical ability, the integration of aesthetic education promotes the improvement of students' comprehensive quality and cultivates students' hands-on ability and teamwork spirit through rich practical activities.

2.2.3 Optimizing Teaching Mode

At the teaching method level, the integration of aesthetic education promotes the diversified development of teaching methods. Teachers are no longer limited to traditional teaching methods but use more situation creation, case analysis, practical experience, and other methods to carry out teaching. For example, in Chinese teaching, teachers guide students to feel the charm of language and characters by creating a beautiful language environment. In mathematics class, by designing beautiful problem-solving ideas, students can experience the rigor and elegance of mathematical thinking. The classroom organization form has also become more flexible due to the integration of aesthetic education. Teachers adopt various organizational forms such as individual guidance, group cooperation, and collective discussion according to the characteristics of the teaching content. In art class, students complete creative works through group cooperation, which not only cultivates team cooperation ability but also harvests the joy of joint creation. In music teaching, through collective activities such as chorus and ensemble, students feel the beauty brought by music. The integration of aesthetic education has profoundly changed the traditional teacher-student relationship. Teachers are no longer just knowledge transmitters but guides who guide students to discover beauty, feel beauty, and create beauty. In classroom interaction, the emotional exchange between teachers and students is more natural, and the teaching atmosphere is more harmonious. Teachers influence and infect students through their own aesthetic literacy and personal charm, forming a benign educational interaction. The teaching evaluation method is also constantly innovating with the integration of aesthetic education. The evaluation system begins to focus on the development of students in aesthetic ability, innovative thinking, and humanistic literacy. In the course evaluation, various evaluation forms, such as work display, talent show, creative design, etc., have been added to comprehensively reflect the students' development status through diversified evaluation methods.

3. Practical Path of Integrating Aesthetic Education into Subject Teaching

3.1 Integration Strategy at the Curriculum Design Level

Curriculum design is the basic link of integrating aesthetic education into subject teaching, and its scientificity and rationality directly affect the effect of aesthetic education integration. A complete curriculum design needs to be systematically planned from three aspects: identification and extraction of aesthetic education elements, aesthetic dimension design of teaching objectives, and aesthetic design of teaching activities.

3.1.1 Identification and extraction of aesthetic education elements

The aesthetic education elements in subject teaching are rich and diverse, and teachers need to have a keen aesthetic awareness to dig deep. The Chinese subject contains the beauty of literature and art, including the artistic conception of poetry, the language beauty of prose, and the beauty of character images in novels. Although mathematics is mainly based on abstract thinking, the golden ratio shows the beauty of harmony, the symmetry of geometric figures reflects the beauty of form, and the simplicity of mathematical formulas shows the beauty of wisdom.

The aesthetic education elements in scientific subjects are reflected in the process of exploring natural laws. Energy transformation in physics shows the harmony and unity of nature, and life phenomena in biology reflect the wonders of nature. By exploring these natural phenomena, students can not only master scientific knowledge but also cultivate the ability to perceive the beauty of nature. The brilliant achievements of ancient civilizations and the character of historical figures in the subject of history all contain rich aesthetic education resources.

3.1.2 Aesthetic dimension design of teaching objectives

The design of teaching objectives needs to integrate aesthetic education objectives with subject teaching objectives organically. At the knowledge level, it is necessary to clarify the aesthetic value in knowledge learning and integrate the discovery and perception of beauty into the process of knowledge imparting. For example, when teaching the growth and development of plants, students should not only master the growth laws but also be guided to feel the magic and beauty of life succession.

At the ability level, teaching objectives should focus on cultivating students' aesthetic and creative abilities. Through observation, experience, performance, and other methods, develop students' aesthetic perception, artistic imagination, and innovative thinking ability. At the emotional level, it is necessary to highlight the educational value of aesthetic education, cultivate students' positive sentiments through aesthetic experience, and form correct aesthetic and value concepts.

3.1.3 Aesthetic design of teaching activities

The design of teaching activities should run through the entire process of classroom teaching. The classroom introduction link needs to create a teaching situation with aesthetic feeling, which can stimulate students' aesthetic interest through appreciation of artworks, reproduction of life situations, multimedia presentations, and other methods. Teachers can use situational teaching methods to guide students to perceive and discover beauty in real scenes by creating situations close to life. Inquiry teaching methods can allow students to experience the beauty of exploration and discovery in practical operations.

The classroom summary stage should focus on the improvement of experience and the sublimation of emotions. Teachers can guide students to review the aesthetic experience in the classroom, share their feelings and gains, and deepen their understanding of beauty. Through the display of works and reports of results, students can show their learning results and gain the joy of success. The design of after-school homework should also reflect the value of aesthetic education. Creative, practical tasks can be arranged to extend the aesthetic experience of the classroom.

The selection and development of teaching resources should highlight the characteristics of aesthetic education. The processing of textbook content should focus on exploring the aesthetic value contained therein, and the selection of auxiliary materials should consider their aesthetic value and educational function. Make full use of the campus environment, social resources, etc., to expand the space for aesthetic education practice. Classroom teaching evaluation should also reflect the requirements of aesthetic education and promote the improvement of students' aesthetic ability and the healthy development of personality through diversified evaluation methods.

3.2 Integration methods at the level of teaching implementation

3.2.1 Aesthetic creation of teaching environment

The aesthetic atmosphere of the teaching environment directly affects the effect of aesthetic education implementation. The layout of the physical environment should reflect the aesthetic feeling. Works with artistic value can be hung on the walls of the classroom, the exhibition area can display students' excellent works, and the study corner can design an elegant reading space.

The creation of a classroom atmosphere should focus on artistry and liveliness. The teacher's appearance, language, and behavior should reflect the quality of beauty and infect students with an elegant temperament. Classroom interaction should be harmonious and natural, and the relationship between teachers and students should be harmonious to form a positive learning atmosphere. The design of multimedia courseware should focus on the harmony of color matching and the artistry of layout so that it can become an effective tool for the implementation of aesthetic education.

3.2.2 Aesthetic education penetration in the teaching process

The aesthetic education penetration in the process of subject teaching should be natural and subtle. In the teaching of new knowledge, teachers should be good at discovering the aesthetic value contained in knowledge. For example, when explaining geometric theorems, it is necessary not only to explain their mathematical principles but also to guide students to feel the rigorous beauty of the reasoning process; when explaining chemical reactions, it is necessary to explain the reaction principles and let students appreciate the beauty of the changes in experimental phenomena.

In the skill training link, aesthetic education elements should be integrated into the practice process. Calligraphy practice requires not only neat fonts but also the pursuit of smooth strokes; reading training requires not only correct pronunciation but also the rhythmic beauty of language. This training method that integrates aesthetic education makes the learning process more fulfilling and interesting. The comprehensive application link should reflect the overall value of aesthetic education. Comprehensive inquiry activities can be designed to allow students to use the knowledge they have learned to solve problems in practice and experience the fun of creation. Organize subject theme activities to provide students with a platform to display their talents and creativity.

3.2.3 Innovative application of teaching methods

Situational teaching method is an effective way to implement aesthetic education. Teachers can create aesthetic situations related to teaching content. In Chinese teaching, the artistic context of the work can be restored through recitation and performance; in history teaching, historical scenes can be reproduced with the help of historical materials and pictures; in music teaching, rich music activities can be designed to let students feel the charm of art in beautiful melodies.

The experiential teaching method emphasizes students' participation. In art courses, students experience the fun of artistic expression through actual creation; in scientific experiments, they feel the beauty of scientific

inquiry through observation and operation. This direct experiential activity can deepen students' perception and understanding of beauty. The inquiry-based learning method can stimulate students' creative potential. Teachers can design open inquiry tasks to guide students to discover and create beauty in the process of problem-solving. This inquiry-based learning method not only cultivates students' innovative thinking but also improves their aesthetic ability.

3.3 Integration measures at the teaching evaluation level

Teaching evaluation is an important link in testing the effect of aesthetic education integration. A scientific evaluation system can effectively promote the deep integration of aesthetic education and subject teaching. Integration at the evaluation level requires systematic design from the aspects of expanding the evaluation dimension, innovating the evaluation method, and applying the evaluation results.

3.3.1 Expansion of evaluation dimensions

Traditional subject teaching evaluation focuses mainly on knowledge mastery and skill application, while the evaluation system, after the integration of aesthetic education, needs to expand to new dimensions. In terms of aesthetic experience, the evaluation should focus on students' perception and understanding of the aesthetic elements contained in subject knowledge. For example, in the evaluation of Chinese teaching, in addition to examining students' understanding of the content of the article, it is also necessary to evaluate their feelings about the beauty of the artistic conception and language of the work; in the evaluation of mathematics teaching, it is necessary to pay attention to students' experience of the beauty of mathematical thinking and the beauty of problem-solving methods.

The evaluation of creative ability is also indispensable. Teachers need to observe students' innovative performance in the learning process and evaluate their ability to discover beauty, express beauty, and create beauty. Evaluate students' artistic imagination in art creation, evaluate students' exploration and innovation ability in scientific experiments, and evaluate students' creative expression ability in literary writing. This multi-dimensional evaluation helps to reflect the development of students fully.

The evaluation of emotional attitudes also needs to be strengthened. Teachers should pay attention to students' aesthetic interests, learning enthusiasm, and value recognition in the learning process. Evaluate their sensitivity to beautiful things, their recognition of excellent culture, and their positive attitude and correct values in aesthetic activities. This emotional dimension evaluation helps to cultivate students' healthy aesthetics and correct outlook on life.

3.3.2 Innovation in Evaluation Methods

Innovation in evaluation methods is the key to achieving multi-dimensional evaluation. The developmental evaluation mechanism can record students' growth trajectory in aesthetic education through growth record bags, learning logs, portfolios, etc. By regularly sorting and analyzing these materials, we can understand the development and changes in students' aesthetic abilities and provide a basis for teaching students in accordance with their aptitude.

Process evaluation runs through daily teaching. Teachers can evaluate students' learning process through observation records, activity performance, classroom presentations, etc. Pay attention to students' participation in exploration activities, their expressiveness in artistic practice, and their ability to express themselves in communication and sharing. This continuous process evaluation can identify problems in a timely manner and adjust teaching strategies. The multi-subject evaluation reflects the openness of evaluation. In addition to teacher evaluation, student self-evaluation, and mutual evaluation are also important components. Involve students in the evaluation process through group discussion, classroom presentation, and achievement reporting. This multi-evaluation method can not only comprehensively reflect students' performance but also cultivate their aesthetic judgment and critical thinking.

3.3.3 Application of Evaluation Results

The scientific application of evaluation results is an important guarantee for improving teaching effectiveness. The diagnostic function of evaluation is reflected in understanding students' strengths and weaknesses in aesthetic ability, innovative thinking, etc., through analyzing evaluation results and providing a basis for teaching improvement. According to evaluation feedback, teachers can adjust teaching strategies and optimize the methods of integrating aesthetic education.

The incentive effect of evaluation cannot be ignored. A positive evaluation orientation enables teachers to be good at discovering the progress of each student and give timely encouragement and affirmation. For students who have outstanding performance in certain aspects they can be encouraged through display exchanges, selection and commendation, etc., to enhance their learning confidence.

The guiding function of evaluation has an important impact on the integration of aesthetic education. Scientific evaluation standards can guide teachers to pay more attention to the integration of aesthetic education elements and guide students to pay more attention to the cultivation of aesthetic ability. The evaluation results should be fed back to students and parents in a timely manner to form a good atmosphere in which schools, families, and society pay attention to the development of students' aesthetic literacy.

In short, teaching evaluation is an important part of the integration of aesthetic education into subject teaching, and a scientific evaluation system can effectively promote the realization of aesthetic education goals. Through the expansion of evaluation dimensions, innovation of evaluation methods, and application of evaluation results, a comprehensive and multi-level evaluation mechanism is formed to provide strong support for the integration of aesthetic education into subject teaching.

4. Guarantee measures for the integration of aesthetic education into subject teaching

The effective implementation of the integration of aesthetic education into subject teaching requires support and guarantees from many aspects. From teacher professional development resource construction to institutional guarantee, systematic planning, and scientific implementation are required to ensure the sustainable development of the integration of aesthetic education.

4.1 Support for teachers' professional development

4.1.1 Improvement of teachers' aesthetic literacy

Teachers' aesthetic literacy is the key to the effective implementation of aesthetic education. Schools should regularly organize teachers to participate in special training on aesthetic education to improve their artistic accomplishment and aesthetic ability. The training content may include art appreciation, aesthetic theory, aesthetic psychology, and other aspects to help teachers build a systematic aesthetic education knowledge system. By organizing art practice activities, such as calligraphy creation, music appreciation, painting sketching, etc., teachers' artistic practice ability can be improved.

Teaching and research activities are important platforms for improving teachers' aesthetic literacy. Schools can carry out thematic teaching and research to explore methods and strategies for integrating aesthetic education into subject teaching. Organize teachers to observe excellent lesson examples and share successful experiences in integrating aesthetic education. Help teachers improve their practical ability in integrating aesthetic education through collective lesson preparation, lesson presentation, and evaluation.

The construction of professional learning communities is also very important. Encourage teachers to form interdisciplinary teaching and research teams to explore interdisciplinary implementation paths for integrating aesthetic education. Establish teacher growth files to record their progress in aesthetic education practice. Mobilize teachers' enthusiasm for participating in the integration of aesthetic education through incentive mechanisms such as evaluation and commendation.

4.1.2 Cultivation of teaching ability

The integration of aesthetic education requires teachers to have professional teaching ability. Teachers should master the identification and development methods of aesthetic education resources and be able to dig out aesthetic education elements from subject knowledge. They should be proficient in using a variety of teaching methods, creating aesthetic teaching situations, and designing lively and interesting teaching activities. The cultivation of curriculum development ability is particularly important. Teachers should learn to integrate aesthetic education goals into curriculum design and develop school-based courses with aesthetic education characteristics. They should be good at integrating various teaching resources, innovating teaching methods, and enriching aesthetic education practice activities. The level of curriculum development should be improved through project research, teaching reform, and other methods.

The ability to apply information technology also needs to be strengthened. Modern educational technology provides new possibilities for the integration of aesthetic education. Teachers should learn to use multimedia technology to create teaching situations and use network platforms to expand aesthetic education resources. They should master the use of digital teaching tools and improve the level of information-based teaching.

4.2 Resource support and guarantee

4.2.1 Construction of Teaching Resources

The construction of an aesthetic education resource library is basic work. Schools should establish an aesthetic education resource library containing pictures, audio, video, and other forms to provide teachers with rich teaching materials. The resource library should be clearly classified and easy to use so that teachers can choose and apply it. The resource library should be updated and maintained regularly to ensure the timeliness and practicality of the resources.

The development of school-based teaching materials is also very important. According to the characteristics of the school and the needs of students, school-based teaching materials with aesthetic characteristics should be developed. The compilation of teaching materials should focus on the unity of knowledge and artistry and highlight the integration of aesthetic elements. A collection of aesthetic cases can be compiled to collect and organize excellent teaching cases to provide reference for teachers.

The construction of practice bases is indispensable. Schools can set up practice places such as art studios and maker spaces to provide students with a platform for artistic creation and practical experience. Establish cooperative relations with cultural and art institutions outside the school to expand the space for aesthetic practice. Build campus cultural corridors, art exhibition areas, etc., to create a strong atmosphere of aesthetic education.

4.2.2 Platform support system

The construction of information platforms should keep pace with the times. Establish an aesthetic resource-sharing platform to realize the network management and application of resources. Develop aesthetic teaching applications to provide teachers with convenient teaching tools. Use the network platform to carry out online training and exchange activities to promote the professional development of teachers. The evaluation management platform should be scientifically designed. Establish an aesthetic education evaluation information system to record and analyze the development of students' aesthetic education. Develop an electronic growth file to record students' performance and progress in aesthetic education comprehensively. Big data analysis provides a decision-making basis for the improvement of aesthetic education teaching. The communication and display platform should be actively built. Organize aesthetic education achievement display activities to provide teachers and students with a stage to display their talents. Establish an inter-school exchange mechanism to promote the sharing and promotion of aesthetic education experience. Use new media platforms to publicize aesthetic education achievements and expand the influence of aesthetic education.

4.3 Implementation suggestions

4.3.1 Suggestions for Teachers

Teachers should establish a correct aesthetic education concept and recognize the important value of aesthetic education integration. In teaching practice, we should pay attention to the following points: First, we should take the initiative to learn and continuously improve our aesthetic literacy and teaching ability; second, we should be brave to innovate and explore effective methods of aesthetic education integration; third, we should strengthen reflection and summarize experience and lessons in a timely manner; fourth, we should cooperate and actively participate in teaching and research activities and professional exchanges.

In the process of curriculum implementation, teachers should pay attention to handling the relationship between knowledge transfer and aesthetic education penetration and avoid integration for integration. According to the characteristics of the subject and the actual situation of the students, appropriate aesthetic education elements and integration methods should be selected. We should pay attention to the individual differences of students, teach students in accordance with their aptitude, and enable every student to develop in aesthetic education activities.

4.3.2 Suggestions for Schools

Schools should integrate aesthetic education into the overall plan and establish and improve relevant systems. Special funds should be set up to ensure the development of aesthetic education activities. We should strengthen the construction of aesthetic education teaching staff and create conditions for the professional development of teachers. We should optimize the curriculum setting, ensure the hours of aesthetic education, and create time and space guarantees for the integration of aesthetic education.

It is important to create a good aesthetic education environment. Schools should attach importance to campus culture construction and create a beautiful educational environment. We should carry out rich and colorful aesthetic education activities to form a strong artistic atmosphere. We should strengthen home-school cooperation, strive for the support of parents and society, and form a joint force for education.

4.3.3 Suggestions for Education Management Departments

Education management departments should strengthen top-level design and improve relevant policies on aesthetic education. We should establish an aesthetic education quality monitoring system and conduct regular evaluations. We should increase funding and improve aesthetic education facilities and equipment. We should organize teaching and research activities and training exchanges to promote the professional growth of teachers. At the same time, we should pay attention to overall coordination and integrate resources from all parties. We should establish a regional aesthetic education resource-sharing mechanism to promote the balanced allocation of high-quality resources. We need to build a platform for communication and cooperation to promote the application of aesthetic education experience. We need to innovate management methods and reserve space for grassroots reform and innovation.

In short, integrating aesthetic education into subject teaching is a systematic project that requires support and guarantees from many aspects. By strengthening the professional development of teachers, improving resource construction, and improving the guarantee mechanism, we can form a good situation where teachers take the initiative, schools strongly support, and departments actively promote, promote the in-depth development of aesthetic education integration and promote the all-round development of students.

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