Kharkiv State Akademy of Design and Arts

Design tools in the formation of art space using the example of at Changzhou High tech Second Primary School

Reporter: XU FAN （ Fanny ）

Fill name of supervisor: Kryvuts S.V.

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01 Research Background and Problem Statement

Era Background: Profound Transformation of Educational Philosophy

Shifting from "Knowledge Indoctrination" to "Competency Cultivation", Focusing on Creativity and Comprehensive Abilities

The integration of aesthetic education and STEAM education has become a key issue in basic education reform. They are highly consistent in core goals, both emphasizing interdisciplinary integrated learning experiences, aiming to stimulate students' innovative thinking and cultivate core competencies for adapting to future society through the collision of art and science.

Practical Dilemma: Lagging Development of Physical Spaces

The fixed desk-chair layout and one-way teaching mode in traditional classrooms form a physical "hard boundary", which can hardly support dynamic project-based learning, group collaboration and diverse artistic expressions, becoming an important bottleneck restricting the implementation of educational philosophies.

Core Question: How to reconstruct learning spaces, break down barriers, and truly achieve the deep integration of aesthetic education and STEAM education?



Traditional Passive Spaces

Standardized desks and chairs are neatly arranged, creating physical barriers between teachers and students. This one-way spatial form limits interaction and cannot carry the collaboration and creation required by modern education.



Modern Interactive Fields

Flexible layouts breaking physical boundaries support multi-form group collaboration. An environment emphasizing both technology and humanity provides an ideal material foundation for aesthetic education immersion and interdisciplinary inquiry.

02 Definition of Core Concepts



Elastic Space

It is a highly adaptable and variable spatial design strategy that can be dynamically adjusted according to teaching scenarios and students' activity needs. It breaks fixed boundaries, enables flexible reorganization and multi-functional use of physical space, and provides infinite possibilities for educational activities.



Aesthetic Education

It is an educational form centered on cultivating students' ability to perceive, appreciate, and create beauty. Beyond skill training, it focuses on guiding students to gain perceptual experience and emotional resonance, and nurtures the soul and enhances comprehensive aesthetic literacy through free expression and artistic practice.



STEAM Education

It is an interdisciplinary integrated education model that combines Science, Technology, Engineering, Art, and Mathematics. Emphasizing real problem-oriented and project-based learning, it enables students to apply multidisciplinary knowledge to solve practical problems in hands-on practice, fostering innovative thinking and comprehensive practical ability.

03 Research Objectives and Significance

Through the design strategy of 'Flexible Space', this study explores spatial solutions for the integration of aesthetic education and STEAM education, providing theoretical support and feasible practical paths for the innovation of art education environments in primary schools.

Theoretical Dimension

Deeply analyze the intrinsic relationship between aesthetic education and STEAM education, clarify the core spatial requirements for interdisciplinary educational models, and lay the theoretical foundation for design strategies.

Methodolog ical Dimension

Construct a design system for primary school art spaces centered on 'Flexible Design', and refine modular and multi-functional spatial organization methods to adapt to dynamic teaching.

Practical Dimension

Select Changzhou Gaoxin No.2 Primary School as a real case, transform theories and methods into physical spatial proposals, and verify the effectiveness and practicality of the strategies through implementation.

The core objective of this study is to break the single-functional boundaries of traditional educational spaces and use the 'flexible' spatial language to respond to flexible and diverse teaching scenarios. Through a closed loop of theoretical construction and practical verification, space is truly made a carrier for the integration of aesthetic and technological education, enabling the physical environment to empower educational innovation.

03 Research Objectives and Significance

The value of this study is not only reflected in specific design outcomes but also in providing a new perspective for the innovative development of educational spaces, generating multi-dimensional positive impacts from teaching scenarios to industry standards and social demonstration.

Value for Teaching Practice

Provide schools with physical environments that support curriculum integration, break down disciplinary barriers, extend space as a continuation of teaching activities, and directly enhance classroom interaction and teaching quality.

Value for Design Discipline

Fill the strategic gap in the field of 'interaction between aesthetic education and technological education' in primary school educational spaces, enrich the theory of educational architectural design, and provide new academic references for similar studies.

Value for Social Promotion

In response to the current situation of educational development in urbanized areas of China, provide a replicable and promotable model for educational space innovation, and contribute to the high-quality and balanced development of basic educational environments in urban and rural areas.

From the optimization of micro teaching scenarios to the allocation of macro social educational resources, this study connects theory and practice through design innovation. It not only solves the spatial problems of specific schools but also provides an innovative path that balances aesthetic experience and functional effectiveness for the future renewal and iteration of basic educational spaces.

04 Research Object and Scope

Research Object: Art Space of Changzhou High tech Second Primary School

A comprehensive art space requiring renovation, designed to break traditional classroom boundaries and become an open learning space supporting diverse art forms, interdisciplinary exploration and creative expression.

Basic Teaching

Supports standardized teaching of art, music and technology-making courses, with professional facilities and independent areas for each discipline.

PBL Core

Core carrier of project-based learning, supporting multidisciplinary integration and creative projects through hands-on practice.

Comm. & Exhibition

Public area for displaying student achievements, group discussions and inspiration exchange, enhancing interaction and a proactive atmosphere.

Campus Context and Design Vision

The school features an open modern campus. This design extends its openness into a "wall-less creative laboratory", using flexible structures and warm natural materials to echo "Let every life grow freely" — a space for both focused learning and free expression.

Definition of Core Research Scope

Focuses on flexible spatial layout, soft boundary treatment, flexible furniture systems, and materials & lighting for an immersive artistic atmosphere — exploring a design paradigm for primary school art education spaces.

05 Research Content and Framework

Example of Flexible Furniture System:

A modular children's desk with adjustable height, expandable tabletop and stowable components — a key material carrier for integrating flexible design into aesthetic education and STEAM curricula.

Core Research Proposition: Through flexible design elements, break fixed boundaries of traditional classrooms and build a dynamic teaching environment that responds to scenario changes, integrates aesthetic education with STEAM, and supports independent student exploration.

Flexibility of Planar Layout

Abandons fixed row-column seating. Adopts reconfigurable zoning and blurred boundaries, allowing the space to switch freely between teaching, collaboration, display and creation.

Flexibility of Furniture System

Lightweight, movable and stackable modular furniture enables rapid spatial reconfiguration and functional diversification, adapting to different course scales.

06 Theoretical Foundations

Architectural Theory: Theory of Flexible Space

Core Idea

Space is adaptive, variable and polysemous. It rejects fixed functions and advocates dynamic adjustment based on scenarios and user development.

Theoretical Support

Provides a basis for dynamic educational space design, enabling space to flexibly adapt to teaching forms and children's stages.

Pedagogical Theory: Design Principles of STEAM Educational Spaces

Core Idea

Centered on project-based learning, supports collaborative inquiry and achievement display. Emphasizes interdisciplinary integration through practice and interaction.

Theoretical Support

Emphasizes modularity, connectivity and openness. Reconfigurable areas and weakened boundaries support collaboration and interdisciplinary practice.

Psychological & Aesthetic Theories: Environmental Aesthetics & Child Developmental Psychology

Core Idea

The environment is an implicit educator, actively shaping behavior, emotions and cognition. Space is a positive educational medium.

Theoretical Support

Guides artistic use of color, natural materials and light & shadow. Warm tones and tactile materials create an approachable atmosphere, stimulating aesthetic perception.

07 Research Methodology and Technical Route

Literature Research Method

Reviews academic theories and achievements to build the theoretical foundation and clarify research boundaries.

Comparative Case Analysis

Analyzes outstanding domestic and international cases to extract transferable design strategies and experiences.

Design Action Research

Follows the iterative cycle of design-practice-reflection-redesign, continuously optimizing solutions in real scenarios.

Post-Occupancy Evaluation (POE)

Uses field research, observations and interviews to evaluate actual space use and gather real feedback.

Space Syntax Analysis

Uses quantitative analysis to parse spatial structures and support layout connectivity and accessibility decisions.

Problem Identification

Identifies core user needs and current pain points.

Theoretical Research

Retrieves literature and constructs a theoretical framework.

Case Analysis

Analyzes benchmark cases to guide proposal conception.

Preliminary Design

Deduces conceptual proposals and forms preliminary design sketches.

Proposal Optimization

Incorporates feedback and iteratively refines to form the final proposal.

Design Implementation

Develops implementation plans and controls key construction nodes.

Effect Evaluation

Collects data and feedback to evaluate design efficiency.

Theoretical Summary

Reviews the design process and precipitates guiding theories.

08 Expected Outcomes and Innovations

Taking primary school art space as a case, this proposal integrates aesthetic education and STEAM into spatial planning, presenting a complete solution from concept to implementation.

Expected Deliverables

High-Quality Thesis Report

Elaborates research background, theory and design process — a professional report with academic and practical value.

Complete Design Drawings

Includes conceptual design, layout, renderings and technical details — with reference value for implementation.

Integrated Theoretical Model

Constructs a flexible space design model integrating aesthetic education and STEAM — a theoretical paradigm for similar spaces.

Core Dimensions of Innovation

Perspective Innovation: Cross-Border Application

First introduction of flexible space theory into aesthetic education + STEAM, breaking rigid functional zoning.

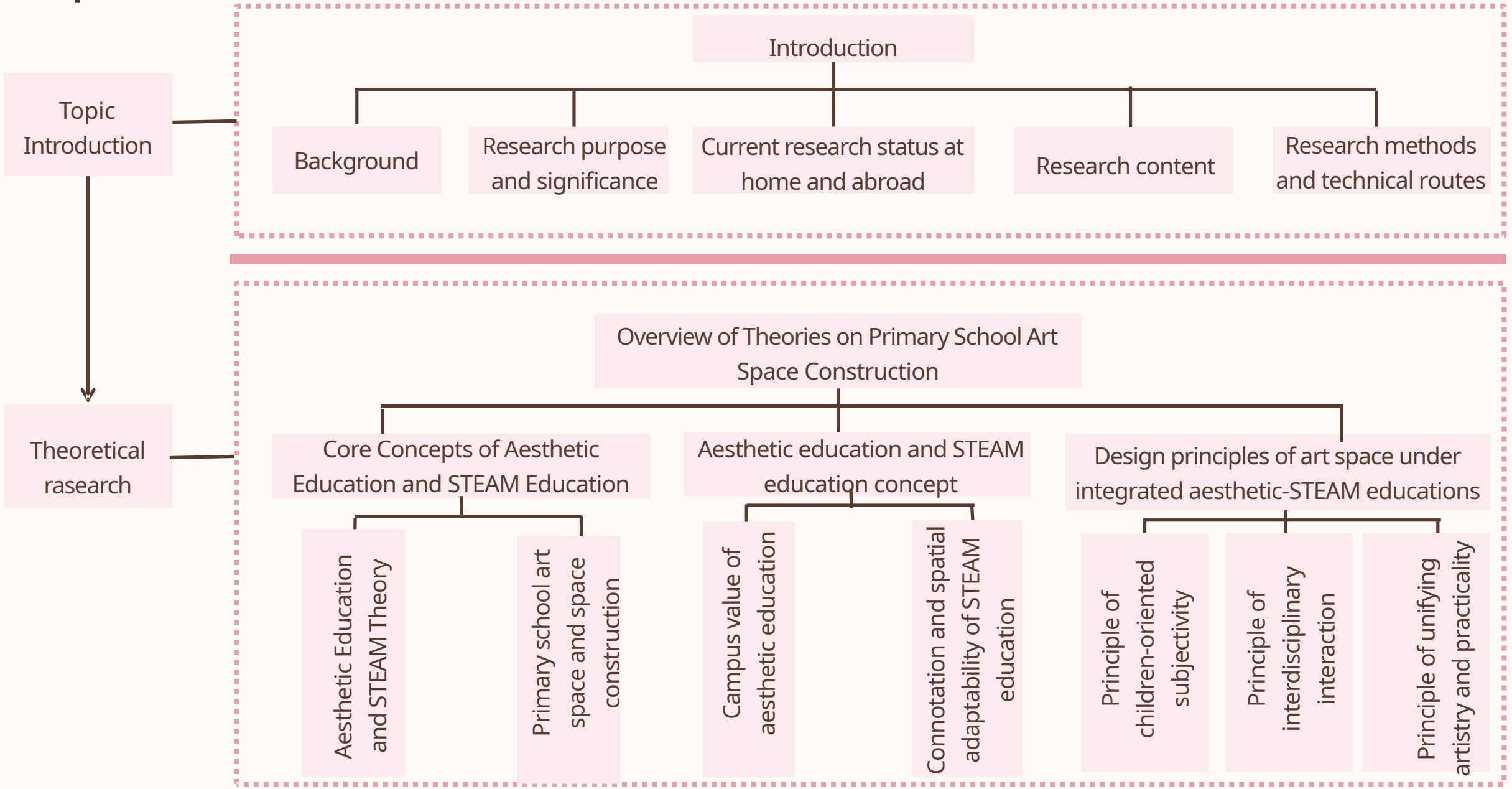
Strategy Innovation: Practical Transformation

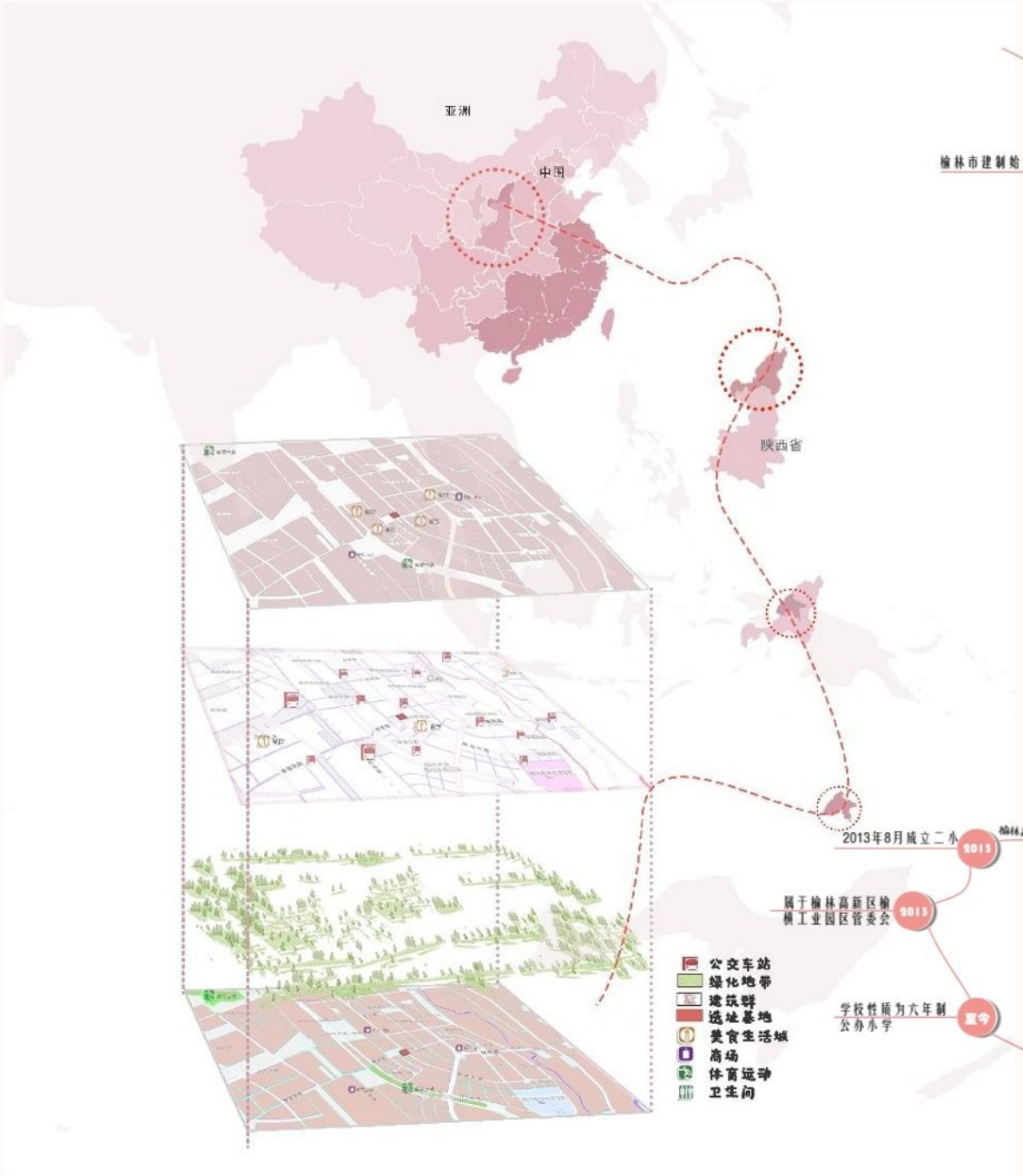
Extracts operable flexible design strategies, translating abstract educational concepts into specific spatial forms.

Value Innovation: Proactive Empowerment

Emphasizes space as an invisible "teaching catalyst" that stimulates interaction and promotes knowledge exploration.

Topic Introduction







Changzhou's administrative establishment dates back to the Spring and Autumn and Warring States periods

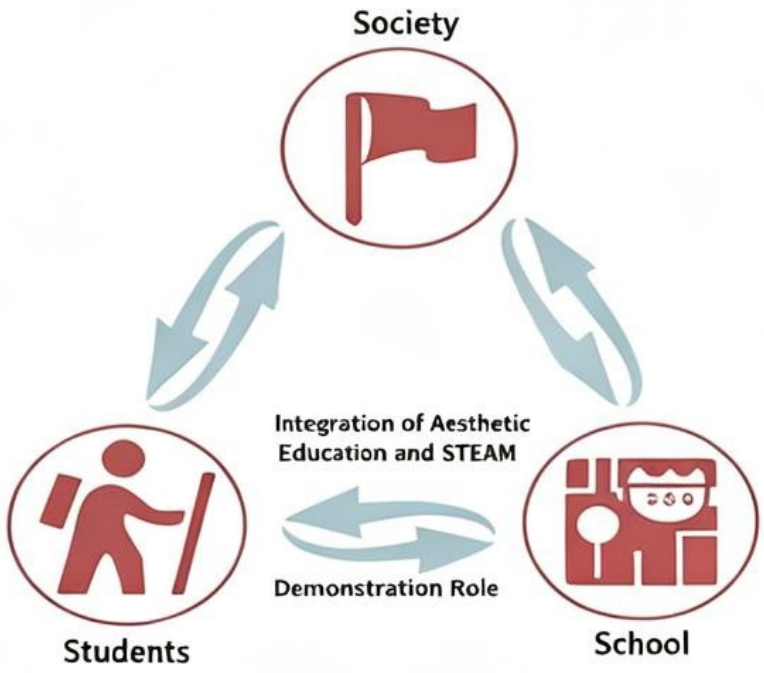
Flourished during the Ming and Qing dynasties

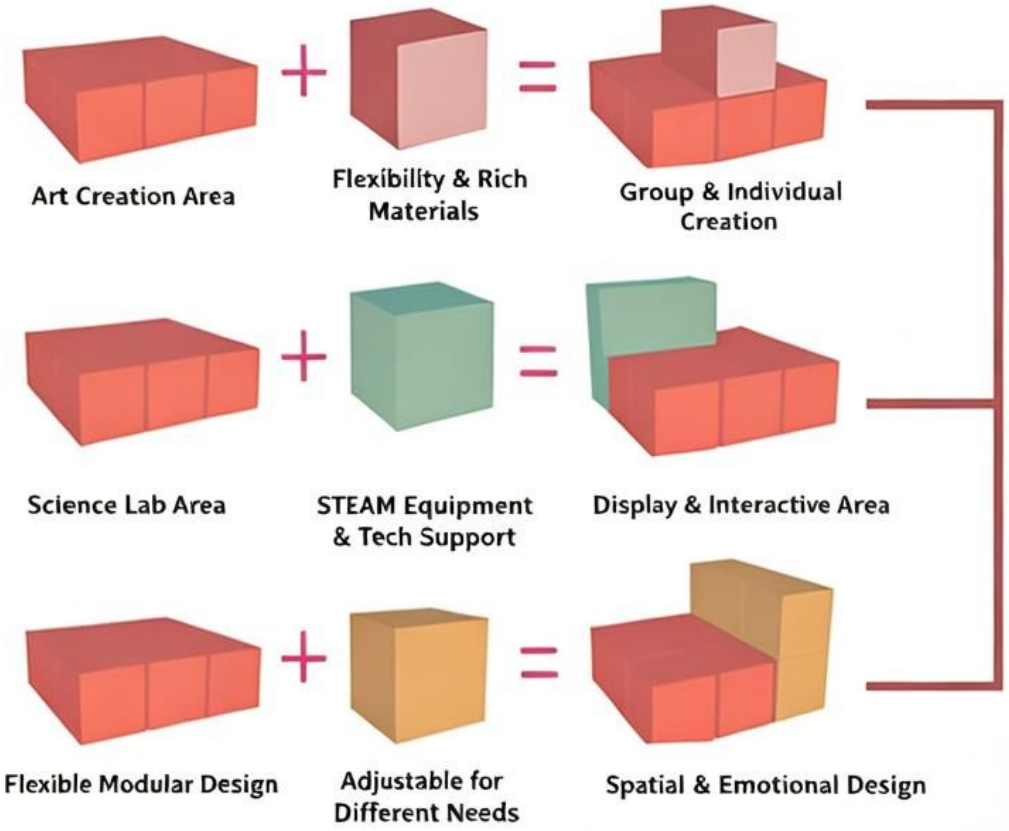
On July 1, 2000, Changzhou was established as a prefecture-level city.

In August 2013, the Second Elementary School was established; Changzhou High-tech Zone No. 2 Elementary School

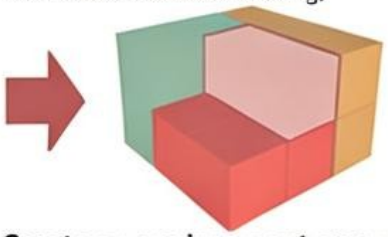
The school is currently a six-year public elementary school

Design concept of Changzhou High tech Second Primary School





Interactive integration of aesthetic education and STEAM education in flexible spaces — Art space design for Yuhuan Gaon No2 Primary School. As a promising development report, the school th needs toe to design, alligorn with monders, spaices, wih motecrine ebeactes integratt art and technnology, helpte ns stuudnemt develop innovation, practice skilg skills, and indinrementation thinking.



Create an environment supporting both artistic creation and artfistic creation and scientific experiments, promoting the interactive integration integration STEAM education.

Problems and Improvements of Changzhou High-tech Second Primary School

The existing problems in current social aesthetic education

The existing problems of Changzhou High-tech Second Primary School

The population of kindergarten is decreasing

The requirement for aesthetic education is increasing

Some areas are remote

Insufficient faculty resources

Lack of comprehensive development and management norms.

Low professional quality

Lack of professionalism

Shortage of resource materials

2. Resource allocation is uneven, with significant disparities between urban and rural areas. Rural and underdeveloped areas lack infrastructure such as art venues and equipment.

3. The course content is rigid and lacks practicality. It has weak connections with traditional culture and modern life, making it difficult to stimulate students' interest.

4. The evaluation system is monolithic and lacks clear direction. The difficulty in quantifying the effectiveness of aesthetic education leads to superficial implementation of policies.

Current social aesthetic education and improvement plan for Changzhou No.2 Primary School

Policy strengthening

Policy support and other suggestions

1. Policy guarantee: Enhance status. Increase special funding for aesthetic education in rural areas, and ensure the availability of basic equipment and qualified teachers.

Through the four-dimensional linkage of "curriculum-resource-evaluation-society", aesthetic education is transformed from "knowledge impartation" to "aesthetic literacy and creativity cultivation".

Scheme design concept

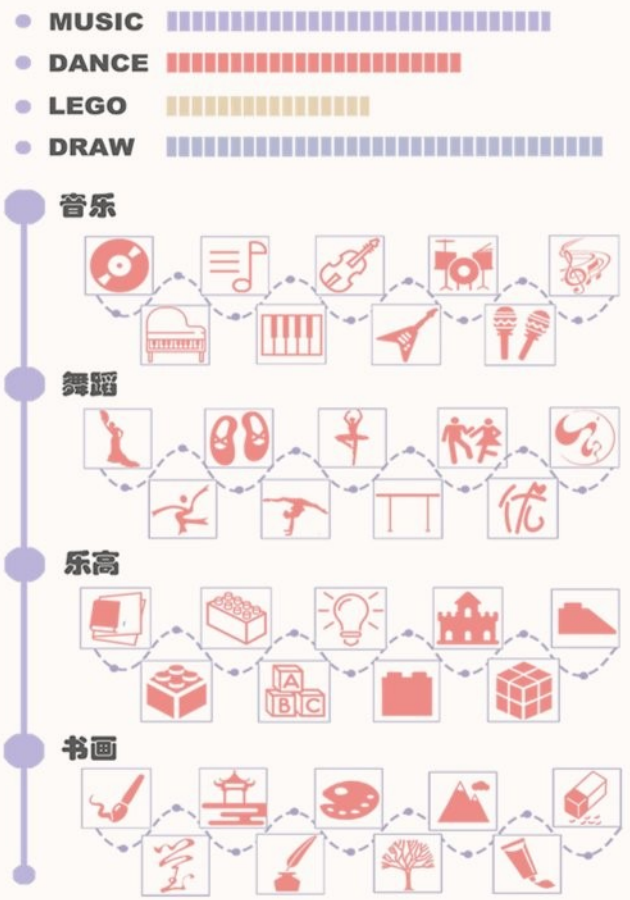
Conceptualization of the specific plan

Features and Innovations: Capable of supporting various forms of educational activities, such as group collaboration, personalized creation, experimental exploration, and more.。

Concept: Integrating aesthetic education (art education) with STEAM education (science, technology, engineering, art, mathematics).

Design: Decorate the space with local art, architecture, and historical elements to create an educational space with local characteristics.

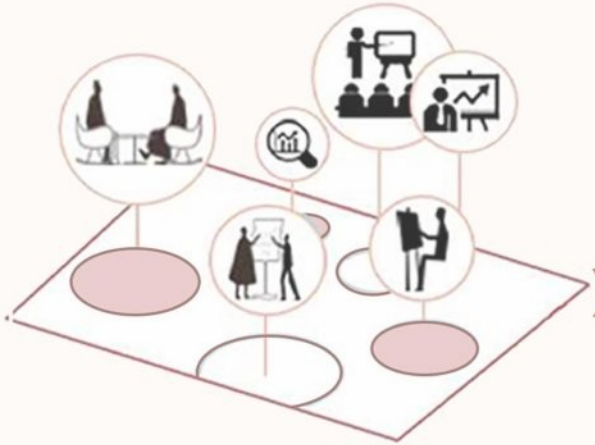
Early-stage demonstration of intended functional zoning





功能空间展示

Functional Space Presentation



概念空间展示

Conceptual Space Presentation



方案概念讲解

Scheme Space Presentation

Integration of aesthetic education and STEAM education: Space design should facilitate the intersection of art and science, technology, engineering, and mathematics, utilizing space design to support interaction and collaboration across multiple disciplines, and stimulate students' innovative thinking and comprehensive abilities. The design should focus on children's emotional experiences, creating a positive, motivating, and inclusive learning atmosphere through elements such as color, materials, light, and shadow, enhancing students' creativity and desire to express themselves.

Design vision





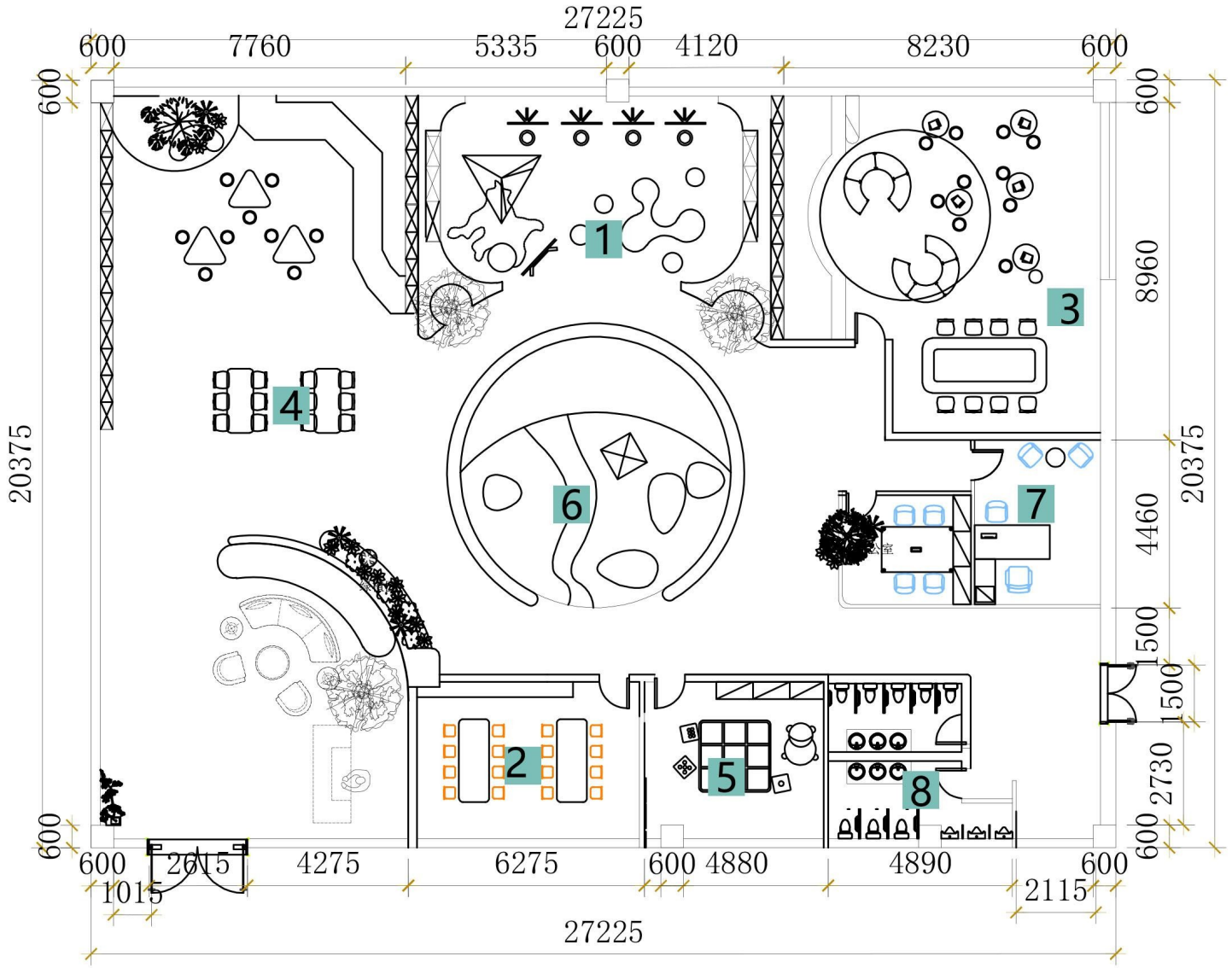












1 艺术创作区 Art Creation

2 steam实验区 STEAM Experi-

3 多功能展示与互动区 Multi-functional

4 合作学习与交流区 Collaborative Learning and Communication Area

5 灵活变化与反思区 Flexible Adjustment and Reflection Area

6 综合活动区 Comprehensive Activity Area

7 办公区 Office Area

8 洗手间 Restroom

Children’s space floor plan

Display of effect drawings for children's space



Art Creation

Display of effect drawings for children's space



Flexible Adjustment and Reflection Area

Display of effect drawings for children's space



STEAM Experiment Area

Display of effect drawings for children's space



Office Area

Display of effect drawings for children's space



Multi-functional Display and Interction Area

Display of effect drawings for children's space



Collaborative Learning and Communication Area

Display of effect drawings for children's space



Collaborative Learning and Communication Area

Display of effect drawings for children's space



Reception

Display of effect drawings for children's space



Display of effect drawings for children's space



09 Research Value and Prospects

Promoting Teaching Innovation

Deep integration of aesthetic education & STEAM
Breaking classroom boundaries
Interdisciplinary learning in action

Empowering Children's Growth

Exploratory & interactive environment
Stimulates curiosity and imagination
Growth through hands-on practice

Leading Industry Development

Paradigm for future school construction
Redefines educational space design
Forward-looking industry reference

Environment is a silent teacher.

Thank you for your attention!