

Research on the Construction of Local Resource Curriculum in Rural Kindergartens Based on STEAM Educational Philosophy

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ABSTRACT

Currently, STEAM courses have gradually been incorporated into the curriculum system at various stages of education in China. Despite the active integration of STEAM education and kindergarten curriculum by Chinese preschool educators, there are still many problems in the specific construction and implementation. This study aims to explore the significance of curriculum construction, curriculum development, and implementation in rural kindergartens using local resources based on the STEAM education concept, with the aim of providing some reference for curriculum reform and development in rural kindergartens.

Keywords: STEAM education, Rural kindergarten curriculum, Local resources.

1. INTRODUCTION

The STEAM concept, as an interdisciplinary integrated educational philosophy, is fundamentally compatible with the educational spirit emphasized in the "Guidelines for Learning and Development of Children Aged 3-6", which emphasizes the holistic nature of early childhood learning and development and the integration of domains and goals. The interdisciplinary integrated education model constructed by it can provide new ideas and strategies for rural kindergarten local resource curriculum, promote diversification, localization, and personalization.

2. DEFINITION OF RELATED CONCEPTS

2.1 STEAM Educational Philosophy

STEAM education originated in the United States, where Professor Ackermann and his team integrated "Art" into STEM education in 2006, ultimately forming the STEAM educational philosophy. STEAM education is an emerging interdisciplinary educational concept that integrates science, technology, engineering, art, and mathematics, aiming to cultivate students'

comprehensive abilities such as creativity, critical thinking, collaboration, and problem-solving skills. STEAM education expresses an educational philosophy that emphasizes the interactivity, creativity, and pioneering nature of education, which is very in line with the requirements of China's rapid development of comprehensive national strength for future talents and the sustainable development of talent strategy.

2.2 Local Resources

The local resources referred to in this article refer to the natural and cultural ecological resources in the area where rural kindergartens are located, that is, the natural and cultural resources with local characteristics. Among them, natural resources mainly include animals and plants, sandy soil, wood and stone, terrain and landforms, as well as various field resources; Human resources refer to historic buildings, folk arts (such as paper cuttings, kites, New Year pictures), folk customs (setting off firecrackers, pasting Spring Festival couplets), etc.

2.3 Rural Kindergarten Curriculum

Rural kindergarten curriculum refers to the educational activities conducted in kindergartens in rural areas. According to the above explanation of

kindergarten curriculum, rural kindergarten curriculum refers to the sum of educational content and processes designed to promote the comprehensive development of children in rural kindergartens based on the characteristics of rural environment, resources, culture, etc.

3. THE SIGNIFICANCE OF STEAM EDUCATIONAL PHILOSOPHY IN THE CONSTRUCTION OF LOCAL RESOURCE CURRICULUM IN RURAL KINDERGARTENS

The STEAM educational philosophy is integrated into the local resource curriculum of rural kindergartens. By integrating curriculum content from multiple fields, the curriculum system of rural kindergartens is optimized to improve the quality of rural kindergarten education.

STEAM education is different from traditional teacher centered education that emphasizes memorization and memorization of knowledge points. STEAM focuses more on stimulating children's curiosity about the unknown world, encouraging them to explore, innovate, and apply interdisciplinary knowledge to solve challenges. The content of STEAM educational activities is very rich, and the scope of local resources is also very broad, making it easy to combine the two to construct a curriculum system. Therefore, integrating the STEAM educational philosophy into the curriculum of rural kindergartens' local resources is very helpful for the construction and improvement of the curriculum system of rural kindergartens, and can effectively improve the current problems of low utilization rate and insufficient development awareness of teachers in rural kindergartens in developing local resources.

4. DEVELOPMENT OF LOCAL RESOURCE CURRICULUM FOR RURAL KINDERGARTENS BASED ON STEAM EDUCATIONAL PHILOSOPHY

Mr. Shi Liangfang believes that curriculum development includes curriculum design, including determining curriculum objectives, selecting and organizing curriculum content, implementing curriculum, and evaluating curriculum. A course plan refers to a specific organizational approach adopted by a course, primarily designed to achieve course objectives and select and organize course content.

4.1 Course Objectives

Course objectives refer to translating a certain educational philosophy or goal into practical actions to achieve the expected outcomes of a specific learning stage.

When setting curriculum objectives, it is important to integrate the STEAM educational philosophy into the actual goals of kindergarten curriculum and form an organic unity. Local resources are a unique resource that can provide children with rich life experiences and help them better understand their surrounding environment. Local resources are a closely integrated whole that runs through people's daily lives. Even if they may seem insignificant, they have extremely important significance and cannot be separated or ignored. The vitality of the curriculum objectives of rural kindergartens' local resources inevitably manifests in the coexistence of curriculum objective generation and preset, and the completeness of the curriculum objectives of rural kindergartens' local resources also inevitably requires the juxtaposition of curriculum objectives' sufficiency and individuality.

4.2 Selection and Organization of Course Content

The course content is the process of selecting course elements from subject knowledge, contemporary social life experience, or learners' experience based on specific educational values and corresponding course objectives.

Whitehead once strongly advocated "for the eradication of the deadly separation between various subjects, as it stifles the vitality of modern curriculum. Education has only one theme, which is a colorful life." The selection and organization of kindergarten curriculum content should be guided by the STEAM educational philosophy, based on the sequential relationship of the five fields in terms of structure, that is, taking mathematical principles as the premise, analyzing science and technology through engineering and art, not only allowing learners to acquire knowledge and skills through integrating multiple fields and interdisciplinary learning forms, but also emphasizing the integration of artistic and humanistic concepts, enhancing learners' ability to solve practical problems, acquire knowledge, and engage in self-construction. Therefore, while considering the relevance of rural resources to daily life, the curriculum content of rural kindergartens must also take into account the

scientific intervention with STEAM educational philosophy, so as to achieve a truly organic unity between the practicality and scientificity of curriculum content, integrate local resources with science, technology, engineering, art, mathematics and other disciplines, and promote the coordinated development of children's body and mind.

4.3 Curriculum Implementation

Curriculum implementation is the process of putting curriculum plans into educational practice to achieve educational and curriculum goals. STEAM education aims to inspire scholars in various fields to explore, tap into, and develop their own potential, as well as expand across fields, levels, time, culture, technology, society, countries, industries, etc., in order to eliminate academic differences and cultivate learners' cross-cultural thinking, cross-domain thinking, cross-cultural thinking, and cross-technology thinking.

For the implementation of local resource curriculum in kindergartens in the tropical rainforest region of Xishuangbanna, this paper takes frangipani as an example. Through physical display, children can experience the colorful flowers of frangipani and the faint fragrance they emit. Through scientific educational activities, children can deeply understand the harmonious relationship between humans and nature, and recognize the growth characteristics of frangipani. The leaves of frangipani can be used to make musical instruments, tableware, and furniture, prevent heatstroke, and can be used to treat bruises and ulcers after being mashed. Finally, through observation and experimentation, children will learn about the unique aroma contained in frangipani and how to make delicious fragrant tea.

4.4 Course Evaluation

Course evaluation refers to the process of studying the value of a course, and is a value activity of judging the improvement of students' learning through the course. It is crucial to establish a course evaluation mechanism to ensure that the design and implementation of rural kindergarten local resource curriculum based on the STEAM education concept can follow the correct direction, achieve the predetermined curriculum goals, and play a crucial role in ensuring the scientificity of the curriculum and comprehensively cultivating talents.

4.4.1 Evaluation of Course Objectives

Teachers should evaluate the course objectives, check whether the course has achieved the expected results, and whether it meets the learning needs and developmental characteristics of young children.

After the implementation of the course, reflecting on whether the course implementation has achieved the expected course objectives, met the learning needs and developmental characteristics of young children, the evaluation should not only focus on the degree of mastery of scientific knowledge by young children, but also pay attention to the development of their scientific thinking ability and scientific exploration ability, making the evaluation more comprehensive, including the assessment of young children's scientific thinking process, problem-solving ability, and cooperation ability.

4.4.2 Evaluation of Learning Achievements

Evaluating learning achievements should include evaluations of both young children and teachers. On the one hand, for young children, including knowledge, skills, emotions, and attitudes, it is necessary to check whether they have mastered the relevant knowledge and skills, and whether they have the corresponding emotions and attitudes. On the other hand, for teachers, it should include: evaluation of the evaluation perspective, evaluation of the sense of participation and involvement in the curriculum, evaluation of the enthusiasm for the curriculum, evaluation of the interaction between teachers and children during the curriculum process, evaluation of the application of STEAM educational concepts, evaluation of the degree of adaptation of local resources, evaluation of communication and exchange with other teachers, evaluation of self-reflection after the course ends, etc.

4.4.3 Evaluation of Different Subjects

Curriculum construction should fully utilize the evaluation functions of different subjects, and not only rely on the voices of teachers, but also incorporate the voices of children, teachers, teaching and research managers, etc. into activity evaluation, and help reflect and improve from multiple perspectives. After the activity, self-evaluation and peer evaluation sessions can be set up for children to record their real experiences after the exploration is completed; Teachers can evaluate

and summarize activities throughout the entire process, emphasizing the sustainability of the activities; Teaching and research management personnel can strengthen interaction with other evaluation subjects through external observation perspectives to expand and enrich the evaluation content. Parents conduct in-depth participation and feedback to evaluate whether their children can actively participate in learning and development, and then provide reasonable suggestions and feedback on curriculum and teaching.

5. IMPLEMENTATION OF LOCAL RESOURCE CURRICULUM IN RURAL KINDERGARTENS BASED ON STEAM EDUCATIONAL PHILOSOPHY

On the basis of in-depth exploration of the curriculum development of rural resources in rural kindergartens based on the STEAM educational philosophy, combined with the actual conditions, teacher abilities, and children's conditions of X kindergarten, the "Simple Instrument Drawing - Elephant-foot Drum" in Xishuangbanna has been selected as a curriculum case to develop a suitable local curriculum plan for implementation.

5.1 Analysis of the Learning Situation of "Simple Instrument Drawing - Elephant-foot Drum"

X Kindergarten, as a pilot reform institution in Xishuangbanna, shoulders the dual mission of exploring innovative paths in modern early childhood education and cultivating educational talents. The kindergarten adheres to the advanced STEAM educational philosophy, possesses abundant and high-quality local education resources, and adopts a five-education integration approach to nurturing students. The following is divided into three parts, discussing the conditions for implementing curriculum cases from three aspects: kindergarten environment, teaching staff, and children.

5.1.1 Analysis of Kindergarten Conditions

In terms of the kindergarten environment, X Kindergarten persistently carries out labor education based on its own implementation plan for labor education. Kindergartens also have a long tradition of small inventions, and extracurricular scientific and technological activities are rich and colorful, especially in areas such as planting and

cleaning, where significant scientific innovation achievements have been made. Therefore, the kindergarten has a strong atmosphere of technological innovation, and well-equipped technology innovation bases and labor practice bases can be fully utilized as rich curriculum resources. This has laid a good learning atmosphere, curriculum resources, and practical foundation for the implementation of rural kindergarten local resource curriculum based on the STEAM educational philosophy.

5.1.2 Analysis of Teacher Capability

The Xishuangbanna is located on the border of China by region, and its economic development speed is relatively slow. Although X kindergarten has better conditions in the area, the teaching staff is still uneven and urgently needs to be improved. But the leaders of X kindergarten attach great importance to the STEAM educational philosophy, regularly providing teachers with relevant professional knowledge and opportunities for practical visits and learning, and providing useful theoretical reserves for the smooth implementation of the "Simple Instrument Drawing - Elephant-foot Drum" case.

5.1.3 Analysis of Preschool Learning Situation

In terms of children's learning situation, preliminary research shows that the children in X kindergarten benefit from the multicultural environment and have a strong interest in ethnic musical instruments. This provides an empirical basis for implementing rural kindergarten local resource curriculum based on the STEAM educational philosophy.

5.2 Course Plan for "Simple Instrument Drawing - Elephant-foot Drum"

The course objective of "Simple Instrument Drawing - Elephant Foot Drum" is set for the kindergarten senior class, based on the STEAM educational philosophy, integrating elements of science, technology, engineering, art, and mathematics into the objective. The organizational process adopts a project-based teaching model. Finally, an interview method is used to evaluate and reflect on the project.

5.2.1 Establishment of the Goal of "Simple Instrument Drawing - Elephant-foot Drum"

The overall goal of this course is to cultivate children's labor literacy and love for their hometown, lay a solid foundation for the improvement of children's collaborative communication and problem-solving abilities, and promote the development of children's knowledge transfer and innovation literacy. Based on the STEAM educational philosophy, the early childhood education curriculum is still guided by the goals outlined in the national "Opinions" and "Outline", and involves interdisciplinary reconstruction of specific curriculum objectives.

5.2.2 Selection of Content for "Simple Instrument Drawing - Elephant-foot Drum"

The content of this course "Simple Instrument Drawing - Elephant-foot Drum" covers five subject areas: science, technology, engineering, art, and mathematics. Specifically, in the field of science, young children understand the structure of elephant-foot drums (such as drum body, drum surface, drum feet, etc.) and use illustrations to assist in understanding; In the field of technology, they can learn to use labor technology tools to make and assemble elephant foot drums; In the field of engineering, young children can utilize knowledge from disciplines such as science, technology, and mathematics to carry out renovation design and showcase achievements; In the field of art, they can integrate aesthetic taste and labor pleasure into the labor process, boldly drawing one's own ideas on the body of the elephant-foot drum; In the field of mathematics, the children can learn to analyze the shape and size of graphics, calculate the size of elephant-foot drums after production, and be able to measure with a scale.

5.2.3 Implementation Process of "Simple Instrument Drawing - Elephant-foot Drum"

The "Simple Instrument Drawing - Elephant-foot Drum" is based on the traditional musical instruments of the Dai ethnic group, a local ethnic group that has been inhabited for generations. It creates real problem scenarios and emphasizes children's personal experience and hands-on participation. For preschoolers in the senior class,

the course design is conducted in a group collaboration manner, jointly exploring small techniques for making elephant-foot drums and seeking solutions to the problem of drawing elephant-foot drums. Through group discussions, teachers can cultivate children's ability to apply multidisciplinary knowledge to solve problems and develop knowledge transfer skills. In the process of solving problems, children can feel the close connection and application between labor and science, technology, and art, and teachers can cultivate children's labor awareness and skills, and use local characteristic local resources as teaching aids to enhance children's sense of pride and belonging to their hometown. The entire course implementation includes four stages: creating problem scenarios, group collaborative exploration, project achievement display, and reflection and evaluation (as shown in "Figure 1").

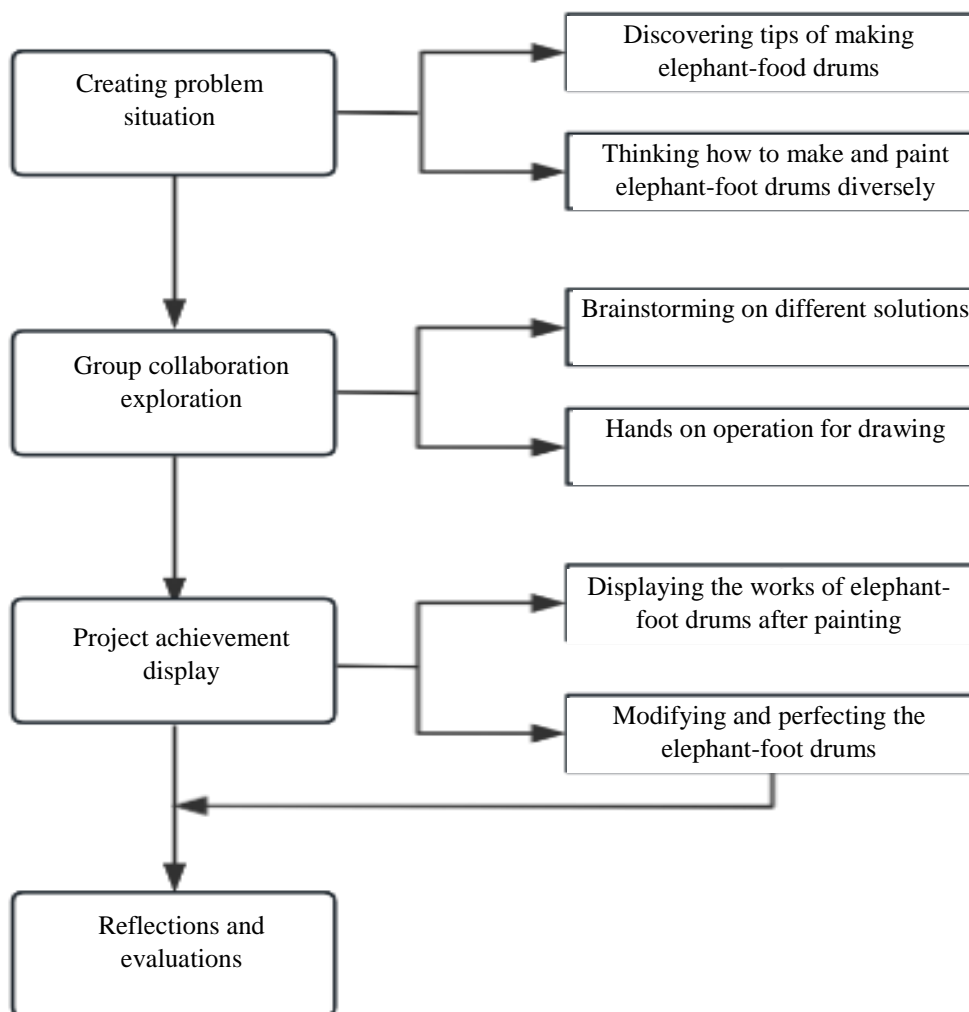


Figure 1 Implementation process of "Simple Instrument Drawing - Elephant-foot Drum".

5.2.4 Evaluation Stage of "Simple Instrument Drawing - Elephant-foot Drum"

Evaluation is a test of the effectiveness of course implementation. According to the development of "Simple Instrument Drawing - Elephant-foot Drum", teachers conduct targeted evaluations of children's performance in the curriculum, evaluate the overall completion of children's learning outcomes, and accommodate multiple evaluation voices for different subjects to make the evaluation complete and comprehensive.

6. CONCLUSION

Teacher STEAM education literacy is an important guarantee for the construction of rural kindergarten local resource curriculum based on the

STEAM educational philosophy. When constructing a rural kindergarten curriculum based on the STEAM educational philosophy, relevant professional training should be provided to preschool teachers. Only by deeply understanding the STEAM educational philosophy, recognizing it from the bottom of their hearts, and conducting profound thinking, can their ideas be integrated into the teaching practice of rural resource curriculum, and meet the needs of the times for cultivating talents.

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